Rev R. J. Saunders
with the authors' regards

FLORA

OF THE

SOUTHERN UNITED STATES.

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CONTAINING ABRIDGED DESCRIPTIONS OF THE

FLOWERING PLANTS AND FERNS

OF

TENNESSEE, NORTH AND SOUTH CAROLINA, GEORGIA, ALABAMA, MISSISSIPPI, AND FLORIDA:

ARRANGED ACCORDING TO THE NATURAL SYSTEM.

BY

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TO THE

REV. MOSES A. CURTIS, D.D.,

OF NORTH CAROLINA,

THIS VOLUME IS DEDICATED,

BY HIS OBLIGED FRIEND,

THE AUTHOR.

PREFACE.

THE object of this work is to present to students and to practical botanists a systematic arrangement of the Phænogamous and higher Cryptogamous Plants of the Southern portion of the United States.

My original design did not contemplate so wide a field; but was limited to an enumeration of the plants of the Carolinas, Georgia, and Florida, — to which, chiefly, my attention has been directed during the last thirty years. But, influenced by the solicitations of friends, and by the apparent need of a more general work, I have extended my plan, so as to embrace all the States south of Virginia and Kentucky, and east of the Mississippi River.

The plan of the work is nearly the same as that adopted by PROFESSOR GRAY, in his excellent *Manual of the Botany of the Northern United States.*

For the benefit of those students who may not have a more perfect treatise at hand, I have prefixed to the Flora a very concise Sketch of the Elements of Botany, and also a Glossary of Botanical Terms. But I would earnestly recommend, to those who may use this work, the admirable Botanical Series* of the author

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* I. How Plants Grow: Botany for Young People. Illustrated by 500 wood engravings. 75 cents.

II. Lessons in Botany and Vegetable Physiology. 360 illustrations drawn from nature. $1.00.

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These works are published by Ivison, Phinney, & Co., of New York.

above named; especially, his *First Lessons in Botany*, in which the general principles of Botany and Vegetable Physiology are fully explained.

I acknowledge with gratitude the kindness of those friends and correspondents who have, in various ways, aided me in my labors.

To the Rev. Moses A. Curtis, of North Carolina, to whom I am permitted to dedicate this volume, especial acknowledgments are due, for valuable information derived from a long and instructive correspondence, for the generous contribution of new and rare specimens, and for important assistance rendered me in every part of my work.

To Professor Asa Gray, of Harvard University, I am under peculiar obligations; not only for the privilege of consulting his valuable library, and his extensive herbarium, which contained many plants previously unknown to me, but also for the benefit of his advice in all matters of doubt and difficulty, and for innumerable acts of kindness, bestowed in every way.

To Mr. Daniel C. Eaton, of New Haven, who is making the Ferns a subject of special study, I am greatly indebted for this first and very careful elaboration of the Southern plants of that interesting family.

I embrace the opportunity to say to those who have aided me hitherto, that, if they will continue to favor me with their discoveries, I indulge the hope of preparing a future edition of this work, which shall be more worthy of their approbation.

Apalachicola, Florida, March 26, 1860.

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INTRODUCTION.

I. SKETCH OF THE ELEMENTS OF BOTANY.

1. Vegetable Tissue.

1. PLANTS are primarily composed of minute membranous vesicles or cells, which are endowed with the power of reproduction, and through which, although closed and destitute of visible pores or openings, the juices of the plant are readily transmitted.

2. Variously modified, these cells form the *Elementary Tissues;* viz. *Cellular Tissue* or *Parenchyma*, *Woody Tissue* or *Woody Fibre*, and *Vascular Tissue* or *Vessels* and *Ducts*.

3. *Cellular Tissue*, which exists in all plants, and of which those of the lower orders are wholly composed, consists of cells aggregated together, and cohering by their contiguous surfaces.

4. *Woody Tissue* is composed of slender and elongated cells, with firm and thickish walls, collected in threads or bundles.

5. *Vascular Tissue* is made up of larger cells, either in the form of continuous tubes, or forming such by the union of their extremities. In some of these, the walls are marked with dots, lines, or bands; while in others they are lined with spirally coiled fibres which are capable of being unrolled. The latter are called *Spiral Vessels*, and exist only in plants which bear proper flowers.

6. Of these tissues are formed the *Organs* of plants; viz. *Organs of Vegetation*, consisting of the *Root*, *Stem*, and *Leaves*, and *Organs of Reproduction*, consisting of the *Flower* and *Fruit*.

2. The Root.

7. The *Root*, or *Descending Axis*, is that part of the plant which grows downward, commonly penetrating the soil, from the moisture of which it imbibes nourishment. It branches indefinitely and without order, but bears no other appendages. Its ultimate branches are called *Rootlets*.

8. Roots which descend immediately from the embryo are termed *Primary Roots*. They are called *Tap-Roots*, when they consist of one thick and fleshy piece; *fascicled* or *clustered*, when of several fleshy branches springing from a common centre; *tuberous* when the branches become greatly enlarged and filled with starchy matter; and *fibrous*, when all the parts are slender and thread-like.

9. But roots under favorable circumstances are developed from other parts of the plant. These are called *Secondary Roots.*

10. *Aerial Roots* are those which spring from the stem or branches above ground. In some, as in many Endogenous Plants, they proceed from the lower joints of the stem; in others, as the Mangroves and Fig-trees of South Florida, they descend from the branches, and at length, penetrating the soil, form new stems in all respects similar to that of the parent tree. The tendril-like roots of some climbing stems are also of this class.

11. *Epiphytes* or *Air-Plants,* of which the Tillandsia and Epidendrum are examples, are those which are borne on the trunks or branches of trees, but draw their nourishment from the air.

12. *Parasites,* like Air-Plants, grow on other plants; but their roots, penetrating the substance of the supporting plant, feed upon its juices. Some, as the Mistletoe and Dodder, fix themselves upon the trunk or branches; others, like the Beech-drop, upon the root.

3. The Stem.

13. The *Stem,* or *Ascending Axis,* is that part of the plant which grows upward into the air and light, bearing leaves and flowers. It exists, under various modifications, in all flowering plants; but in those which are said to be *stemless* or *acaulescent,* it is very short, or concealed in the ground.

14. It consists of a succession of leaf-bearing points, or *Nodes,* separated by naked joints, or *Internodes.* The growing points, which are protected by reduced leaves in the form of scales, are called *Buds.* These are *terminal,* when they terminate the axis; *axillary,* when they spring from the axil of the leaves; that is, from the point where the upper surface of the leaf joins the stem; and *adventitious,* when they are developed from any other part.

15. Simple stems grow by the development of the terminal bud alone; branching stems expand indefinitely from the axillary buds also. The ultimate divisions of the branches are called *branchlets.*

16. The jointed stem of Grasses and similar plants is a *Culm.*

17. The thick and simple stem of the Palmetto is a *Caudex.*

18. A *Rhizoma,* or *Rootstock,* is a perennial stem, commonly creeping on the ground, or beneath its surface, developing annually a bud at the apex, while the older portion decays.

19. A *Tuber* is a subterranean branch, excessively thickened by the deposition of starchy matter, and furnished with minute scales, having concealed buds (eyes) in their axils.

20. A *Corm* is a solid globular subterranean stem, filled with starchy matter, with a bud at the apex and roots below.

21. A *Bulb* is a short subterranean stem, made up of the thickened bases of leaves, in the form of persistent scales. It is *tunicated* or *coated,* when the scales are large and wrapped one within the other; and *scaly,* when these are small and imbricated. Small aerial bulbs, such as are borne in the axil of the leaves of the Tiger-Lily, and among the flowers of the Onion, are called *Bulblets.*

22. A *Stolon* is a branch which bends to the earth, strikes root, and forms a new plant.

23. A *Runner* is a thread-like prostrate branch, producing roots and a tuft of leaves at its extremity.

24. *Spines*, or *Thorns*, are imperfectly developed, leafless branches, with hard tips.

25. *Tendrils* are the thread-like spirally coiled branches of weak and slender plants, by means of which they attach themselves to other and stronger objects for support. Leaf-stalks and parts of the inflorescence are occasionally converted into tendrils.

26. Plants which die down to the ground at the close of the season, or after maturing seed, are called *Herbs*, or *Herbaceous Plants*. Those with woody stems, lasting from year to year, when of humble size, are called *Shrubs*, and when reaching an elevation of twenty feet or more, *Trees*.

4. Internal Structure of Stems.

27. The stems of Phænogamous Plants are composed of cellular tissue, woody tissue, and vessels; and upon the arrangement of the latter are founded the two divisions of *Exogenous* and *Endogenous Plants*.

28. Exogenous stems consist of a central column, called the *Pith;* an external covering, called the *Bark;* and a middle portion, called the *Wood*.

29. Their *Pith* is a mass of cellular tissue, enclosed in a thin sheath of spiral vessels, termed the *Medullary Sheath*.

30. Their Wood is composed of one or more layers of woody and vascular tissue, traversed by thin plates of cellular tissue, called the *medullary rays*, and annually increased, in all perennial stems, by the addition of a new layer to the outside of that of the previous year. The new wood is called the *Alburnum*, or *Sap-wood*, and the older and harder portion, the *Duramen*, or *Heart-wood*.

31. The Bark, like the wood, is made up of layers. The inner bark, or *Liber*, is composed chiefly of woody fibre. Between it and the wood, in the growing season, is secreted a thin mucilage, called the *Cambium*, in which the new layers of wood and bark are developed. Surrounding the inner bark is the *Green bark*, consisting of cellular tissue filled with Chlorophyll, or the green matter of vegetables. Covering the whole is a thin membrane of cellular tissue, called the *Epidermis*, or *Cuticle*.

32. Endogenous stems exhibit no distinction of pith, wood, and bark; but are composed of threads or bundles of woody tissue, irregularly embedded in cellular tissue. They increase in diameter by the formation of new bundles, which are chiefly directed to the centre of the stem.

5. The Leaves.

33. Leaves are expanded appendages of the stem, developed from axillary and terminal buds. They consist of loose cellular tissue, supported by a network of woody and vascular tissue, called *veins* or *ribs*, and protected by the epidermis. In them the fluids received from the root, and what they imbibe from the air, through minute openings in the epidermis, called *stomata*, are converted into the proper food of the plant.

34. In the bud, they are folded, plaited, or coiled in various ways. This is termed their *Vernation*.

35. A complete leaf comprises the *Blade*, the *Stalk*, and a pair of *Stipules;* but these three parts are not always present in one leaf.

36. The Blade, Limb, or Lamina, is the expanded part, and presents a great variety of forms. It is *simple*, when it consists of a single piece, however cut or divided; and *compound*, when of two or more distinct pieces (*leaflets*), which separate by a joint.

37. The Stalk, or Petiole, connects the blade with the stem. When it is wanting, the leaf is said to be *sessile*. The stalk of a leaflet is called a *Petiolule*.

38. The Stipules are appendages of various forms, placed one on each side at the base of the petiole. They are separate, or else united with the petiole, or with each other, when they occasionally form a sheath (*Ochrea*) around the stem above. The stipules of a leaflet are called *Stipels*.

39. The manner in which the veins are distributed through the leaf is called *Venation*.

40. There are two modes of venation; viz. *parallel-veined*, or *nerved*, when several simple veins, or ribs, run parallel from the base of the blade to its apex; and *reticulated*, or *netted-veined*, when the veins divide into numerous primary and secondary branches (*veinlets*), which again unite to form a kind of network.

41. The latter mode embraces both the *pinnately veined*, or *feather-veined* leaf, where the petiole is continued through the middle of the blade, giving off at intervals lateral veins; and the *palmately veined* or *ribbed* leaf, when it divides at the apex into three or more strong branches.

42. The manner in which leaves are divided corresponds with that of their venation.

43. A simple pinnately veined leaf becomes *pinnatifid*, when the incisions (*sinuses*) extend about half-way to the *midrib*, or continuation of the petiole; and *pinnately divided*, when they extend down to the midrib. A compound pinnately veined leaf is, of course, *pinnate*, with the separate leaflets arranged on each side of the common petiole. When this is terminated by a leaflet, the leaf is said to be *odd-pinnate*, or *unequally pinnate*, and when it is wanting, *abruptly pinnate*.

44. So, also, the palmately veined leaf becomes *palmately* cleft or divided, when the incisions are directed toward the base of the blade. When the divisions consist of separate leaflets, it becomes *palmately* compound.

45. Floral leaves, or those from the axils of which the flowers are developed, are called *Bracts;* and those which are borne on the flower-stalk, *Bractlets*.

6. The Flower.

46. A Flower consists of those parts, or organs, which are concerned in the production of seed. Like the leaf, of which its parts are a modification, it is developed from an axillary or terminal bud.

47. The manner in which the flowers are arranged on the stem or branches is termed the *Inflorescence*.

48. There are two modes of inflorescence; viz. the *indefinite*, or *centripetal*, where the flowers all arise from axillary buds, the lowest or outermost expanding first, while the axis elongates indefinitely from the terminal bud; and the *definite*, or *centrifugal*, where the flowers arise from the terminal bud, first, of the main axis, and successively from that of the branches.

49. When the flowers arise from the axil of the ordinary leaves of the stem, they are said to be *axillary;* but oftener, they are disposed in a more or less obvious cluster, each arising from the axil of a greatly reduced leaf, or *Bract.*

50. The stalk of a solitary flower, or of a cluster of flowers, is termed the *Peduncle;* or, when it proceeds from the root, a *Scape;* and that of each individual of a cluster is called a *Pedicel.* The main axis of a cluster, or that portion of the common peduncle which bears the flowers, is called the *Rachis.*

51. The indefinite inflorescence includes the *Spike, Ament, Spadix, Raceme, Corymb, Umbel, Head,* and *Panicle;* the definite, the *Cyme* and its modifications.

52. The Spike consists of a more or less elongated rachis, with the flowers sessile, or nearly so, in the axils of the bracts.

53. The Ament, or Catkin, is the scaly deciduous spike of the Pine and Willow.

54. The Spadix is a spike with the flowers borne on a thick and fleshy rachis. It is naked, as in the Golden-club, or enclosed in a hood, called the *Spathe,* as in the Indian Turnip.

55. The Raceme presents the elongated rachis of the spike, but the flowers are raised on pedicels.

56. The Corymb is a short raceme, with the lower pedicels elongated, so as to bring their flowers to the same level as the upper ones.

57. The Umbel is a modification of the raceme, but with the rachis so much contracted, that the pedicels (rays) apparently spring from a common centre. When the umbel is compound, the partial umbels are termed *Umbellets.*

58. A Head is an umbel with sessile flowers. The crowded bracts of this and the preceding are collectively termed the *Involucre,* and those of the umbellets, the *Involucel.*

59. When the pedicels of a raceme or corymb are transformed into branches, either simple or successively divided, the inflorescence becomes a *Panicle.*

60. When the further growth of the axis is arrested by a single terminal flower, and from the axils below branches are developed, each terminated by a flower, and bearing branches in the same manner, the inflorescence is said to be *cymose* or *centrifugal.* But it presents several peculiar forms, occasioned either by the imperfect development, or by the entire suppression of some of its parts. Some, as the true *Cyme,* are short and expanded; others are elongated, like the spike or raceme. In all, the flowers expand successively from the summit, downward, or from the centre, outward.

61. The Flower consists, commonly, of one or more whorls of leaves, called the *Floral Envelopes,* — of which the outer one is termed the *Calyx,* and the inner one the *Corolla,* — an inner whorl of thread-like organs, called the *Stamens,* and one or more central organs, called the *Pistils.* These are inserted on the apex of the axis, which here takes the name of *Torus,* or *Receptacle.*

62. The Floral Envelopes are sometimes wanting; but the stamens and pistils, being the fertilizing organs, are, in all perfect flowers, always present.

63. The Calyx is composed of leaves (*Sepals*), usually of a greenish color, which are distinct, or united by their margins. When the floral envelopes consist of a single whorl only, it is always a calyx.

64. The Corolla is usually of a thinner texture than the calyx, and variously colored. Its leaves (*Petals*), when of the same number as the sepals, always alternate with them. They are also often united by their contiguous margins, to form a *monopetalous* corolla.

65. When the calyx and corolla are so nearly alike as not to be readily distinguished, they are collectively termed the *Perianth*.

66. A flower is *complete* when all its parts are present; *incomplete*, when the floral envelopes, or a part of them, are wanting; *perfect*, when the stamens and pistils are borne in the same flower; *imperfect*, or *diclinous*, when they are borne in separate flowers; *regular*, when the sepals or petals are of uniform shape and size; and *irregular*, when they are unlike in shape or size.

67. Imperfect flowers are further distinguished into *monœcious*, when those furnished with stamens (*staminate* or *sterile flowers*) and those furnished with pistils (*pistillate* or *fertile flowers*) are borne on the same plant; *dicœcious*, when they are borne on separate plants; and *polygamous*, when both perfect and imperfect flowers are borne on the same or different individuals.

68. The manner in which the parts of the floral envelopes are arranged with respect to each other in the bud is termed their *Æstivation*. They are *valvate*, when their contiguous margins meet, without overlapping; *induplicate*, when these project inwardly; *reduplicate*, when they project outwardly; *imbricated*, when the margins of one overlap the adjacent margins of the two next within; *convolute*, or *twisted*, when one edge of each piece covers the margin of the one next before it, and the other edge is covered by the margin of the one next after it; and *plaited*, when the parts are folded lengthwise.

7. The Stamens.

69. A Stamen consists of a sac, called the *Anther*, and, usually, a stalk, called the *Filament*, by which it is supported.

70. They are *hypogynous*, when they are inserted on the receptacle; *perigynous*, when on the calyx; *epigynous*, when on the ovary; *epipetalous*, when on the corolla; and *gynandrous*, when they are united with the style. They are, also, often combined with each other, either into one set (*monadelphous*), or into two, three, or more sets (*diadelphous, triadelphous*, &c.).

71. The Anther is composed, commonly, of two united cells, which open in various ways, and discharge a yellow, fertilizing powder, called the *Pollen*. The part which connects the cells is the *Connective*.

72. It is *erect*, or *innate*, when fixed by its base to the apex of the filament; *adnate*, when fixed to the filament by its whole length; *versatile*, when fixed by the middle to the apex of the filaments on which it turns as on a pivot; *introrse*, when it faces inwardly toward the pistils; and *extrorse*, when it faces outwardly toward the petals. Occasionally, they are united into a tube (*syngenesious*).

73. Between the stamens and the pistils is often a fleshy expansion, called the *Disk*.

8. The Pistils.

74. The Pistils occupy the centre of the flower. They are inserted, singly or in a whorl, on the receptacle; or, when this is elongated or enlarged, they cover its surface.

75. A Pistil consists of three parts, — the *Ovary*, the *Style*, and the *Stigma*.

76. The Ovary is the lower and hollow portion, containing the *Ovules*, or rudiments of seeds.

77. The Style is an extension of the ovary, commonly of its apex, which supports the stigma.

78. The Stigma is commonly the apex of the style, or, when this is wanting, of the ovary, denuded of the epidermis.

79. When the pistil is composed of a single piece, or *carpel*, it is *simple;* but, oftener, it is *compound*, consisting of two or more carpels, united by their margins, or by their sides, which then form partitions or *dissepiments*, that divide the pistil into as many cells as there are carpels.

80. The line next the axis, or which corresponds to the united margins of a folded leaf, is called the *Ventral Suture;* and that which corresponds to the midrib, the *Dorsal Suture*.

81. The Ventral Suture bears the ovules; and the line of their attachment is called the *Placenta*. This is *central* or *axile*, when it occupies the centre of the pistil, and *parietal*, when it is borne on its walls.

82. The Ovule is connected with the placenta by a cord, called the *Funiculus*. It consists of a central body, called the *Nucleus*, enclosed in two sacs, each with an opening at the apex, called the *Foramen*. The outer sac is termed the *Primine*, and the inner one the *Secundine*. The point where these parts unite is called the *Chalaza*.

83. The Ovule is *orthotropous* when the chalaza is next the placenta, and the apex at the opposite extremity; *campylotropous*, when it curves on itself, so as to bring the apex near the chalaza; *anatropous*, when it is inverted on its cord, to which it adheres; the true apex pointing to the placenta, while the chalaza, or true base, points in an opposite direction; and *amphitropous*, when it is half inverted on its cord, its axis running parallel with the placenta. The adhering portion of the cord in the last two cases is termed the *Raphe*.

9. The Fruit.

84. The Fruit is the ovary, with its contents, brought to maturity. But during this process it sometimes undergoes important changes, either by the obliteration or abortion of some of its cells, partitions, or ovules, or by the formation of false partitions, or by various changes effected in its walls, or in the parts which surround them.

85. In some, the walls, or *Pericarp*, remain closed; in others, they open, or are *dehiscent* in various ways, oftener splitting regularly into separate pieces, called *Valves*.

86. Many terms are employed to designate the different kinds of fruit, but only the following are in general use.

87. A *Follicle* is a simple fruit, opening along the ventral suture only; as the fruit of the Milkweed.

88. A *Legume* is a simple fruit, opening at both sutures; as in the Pulse Family. When it is divided across into closed joints, it is a *Loment*.

89. A *Capsule* is a dry compound fruit, opening in various ways. When it opens at the dorsal sutures, or into the cells, the dehiscence is said to be *loculicidal;*

and *septicidal*, when it opens at the ventral suture, or through the partitions. When it opens transversely, the upper portion falling off entire, like a lid, the dehiscence is *circumscissile*.

90. A *Silique* is a slender two-valved capsule, with two parietal placentæ connected by a persistent false partition. A short and broad silique is a *Silicle*. These are peculiar to the Mustard Family.

91. A *Pepo* is the fleshy indehiscent fruit of the Gourd Family, with the seeds often embedded in the pulpy placentæ.

92. A *Pome* is the indehiscent fruit of the Apple or Quince tribe, where the cells are enclosed in the enlarged and fleshy tube of the calyx.

93. A *Berry* is an indehiscent fruit, with the seeds embedded in soft pulp.

94. A *Drupe* consists of one or more hard or bony cells, called the *Putamen*, covered with a fleshy or pulpy coat, called the *Sarcocarp;* as the Peach, Holly, &c.

95. An *Achenium* is a small, dry, one-seeded, indehiscent fruit, the walls of which do not adhere to the enclosed seed. When these are closely united, it becomes a *Caryopsis;* or when the walls are thin and bladder-like, and open irregularly, a *Utricle*.

96. A *Nut* is a dry, indehiscent fruit, with hard or bony walls; as the Acorn and Hickory-nut.

97. A *Samara* is a dry, indehiscent fruit, with its walls expanded into a wing; as that of the Maple and Elm.

98. The collective fruit of the Pine is called a *Cone* or *Strobile*.

10. The Seed.

99. The Seed is the matured ovule, and contains the *Embryo*, or the rudiment of a future plant. The outer coat, or *Integument*, is called the *Testa*. It varies greatly in texture, and is occasionally furnished with hairs, which either cover the entire seed, or form a tuft (*Coma*) at one or both extremities.

100. The terms employed in describing the ovule are chiefly applicable to the seed. The foramen of the ovule, which is closed in the seed, becomes the *Micropyle*, and is always opposite the radicle of the embryo. The scar left on the seed by the separation of the cord is the *Hilum*. It is sometimes enveloped in a false covering, originating, during its growth, from the cord or from the placenta. This is called the *Aril*.

101. The Testa includes either the embryo alone, or an additional nutritive substance, called the *Albumen*.

102. The *Embryo* consists of the *Radicle*, the *Plumule*, and the *Cotyledons*.

103. The Radicle is the first joint of the stem. In germination, it elongates at one end to form the root, and at the other, from a minute bud (*Plumule*), to form the stem. It is *inferior* when it points to the base of the pericarp, and *superior* when it points to its summit.

104. The Cotyledons are the seed-leaves. The embryo of the Exogenous Plants bears two of these, placed opposite (rarely three or more in a whorl), while that of Endogenous Plants bears only one. Hence the former are called *dicotyledonous*, and the latter *monocotyledonous*.

105. When the embryo is exposed to the combined influence of air, heat, and moisture, it develops into a growing plant. This is termed *Germination*.

106. The preceding considerations refer solely to Phænogamous Plants, or those which bear flowers, consisting of stamens and pistils, and produce seeds, which contain an embryo, or a rudiment of a future plant.

107. But there are plants of a lower grade, which do not bear flowers furnished with ordinary stamens and pistils, nor seeds containing an embryo, but in place of seeds they produce minute powdery bodies, called Spores. These are termed

11. Cryptogamous or Flowerless Plants.

108. The stems of the higher orders of Cryptogamous Plants — and these only are embraced in this work — exhibit nearly the same anatomical structure as those of Phænogamous Plants. But they grow only from the apex, without any perceptible increase of diameter, and therefore are termed *Acrogens* or *Point-growers*.

109. The different orders presenting no common type, the habit, the mode of inflorescence, and the process of fertilization, so far as it is known, being different in all of them, the characteristics of each are more conveniently explained in the body of the work, and need not be enumerated here.

12. Classification.

110. Classification consists in the arranging of plants possessing like structure, habits, &c., into groups, designating them by proper names, and defining them by appropriate characters.

111. An assemblage of individuals which are so essentially alike as to indicate their descent from a common parent, and which preserve their characteristics when propagated from seed, is termed a *Species*. But circumstances connected with the growth of an individual may produce some deviation from its ordinary state, and it then becomes a *Variety*.

112. When the pistil of one species is fertilized by the pollen of another allied species, the result is a *Hybrid*.

113. An assemblage of species agreeing with one another in structure and appearance constitutes a *Genus*. In the same manner, although with fewer points of agreement, genera are collected into *Orders*, or *Families*, and these, in turn, into *Classes*.

114. But each of these may include members that agree in some important points, which are not common to the others. Of such are formed the intermediate divisions of *Subgenera*, *Suborders*, and *Subclasses*.

115. There are two modes or systems of classification; the Artificial System of Linnæus, and the Natural System of Jussieu.

116. In the Artificial System, the Classes and Orders are founded on the number, position, and connection of the stamens and pistils, regardless of any other relationship. In the Natural System, every part of the plant is taken into consideration; and the Orders embrace those genera which agree with each other in the greatest number of important particulars. The latter system is now in almost universal use, and is the one adopted in this work.

II. GLOSSARY OF BOTANICAL TERMS.

*** The numbers annexed to the names, or their definition, refer to the paragraphs of the preceding Sketch; but those preceded by "Flora, p." refer to the pages of the Flora.

Abortive: not fully developed.
Abruptly pinnate, 43.
Accumbent: Flora, p. 24.
Achenium, 95.
Achlamydeous: without floral envelopes.
Acrogens: Flora, p. 585.
Acuminate: tapering into a slender point.
Acute: pointed.
Adherent: growing fast to another body.
Adnate: same as Adherent.
Adnate Anthers, 72.
Aerial Roots, 10.
Æstivation, 68.
Air-Plants, 11.
Aggregate: crowded together.
Albumen, 101.
Alburnum, 30.
Alternate: scattered; one after another.
Alveolate: deeply pitted.
Ament, 53.
Amentaceous: bearing aments.
Amphitropous, 83.
Anatropous, 83.
Androgynous: containing both staminate and pistillate flowers.
Angiospermæ: Flora, p. 1.
Annual: lasting only one year.
Annular: disposed in, or forming, a ring or circle.
Anterior: applied to that part of an axillary flower which is farthest removed from the main axis.
Anther, 71.
Apetalous: without petals.
Apiculate: tipped with a short abrupt point.
Appendage: something added to a part.
Appressed: lying near to; pressed against.
Aquatic: growing in water.
Arborescent: tree-like.
Areolation: spaces between the leaf-veins.
Aril, 100.
Arilled: covered with an aril.
Armed: furnished with thorns, prickles, &c.
Articulated: divided into joints; connected by a joint.
Ascending: } curving outward and up-
Assurgent: } ward.
Attenuated: gradually narrowed.
Auriculate: eared; bearing small lateral lobes.
Awl-shaped: narrow and sharp-pointed.
Awn: a rigid bristle-like appendage.
Awned: bearing an awn.
Axil: the point where the upper surface of the leaf joins the stem.
Axillary: borne in the axil.
Axis: the central line of a body; the part around which others grow.

Baccate: berry-like; juicy.
Barbed: bearing rigid points which are directed backward.
Bark, 31.
Basal: belonging to the base.
Beaked: ending in a stout point.
Bearded: bearing tufts or lines of hairs.
Bell-shaped: expanding from a short and rounded base, into a spreading border.
Berry, 93.
Bidentate: two-toothed.
Biennial: lasting two years.
Bifid: two-cleft.
Bifoliolate: bearing two leaflets.
Biglandular: bearing two glands.
Bilabiate: two-lipped.
Bipinnate: twice pinnate.
Biternate: twice ternate.
Bladders: small sacs filled with air.
Blade: the expanded portion of a leaf, &c.
Boat-shaped: see Carinate.
Brachiate: with pairs of opposite branches spreading at right angles.
Bract, 45.
Bracted: furnished with bracts.
Bractlet, 45.
Bristle: a rigid hair.
Bristly: beset with, or like, bristles.
Brush-shaped: divided at the apex into numerous hairs or filaments.
Bud, 14.
Bulb, 21.
Bulbous: shaped like a bulb.
Bulblet, 21.

Caducous: falling away early.
Cæspitose: growing in a tuft.
Callous: thickened.
Calyx, 63.
Cambium, 31.
Campanulate: see Bell-shaped.
Campylotropous, 83.
Capillary: hair-like.
Capsule, 89.
Capsular: relating to, or with the characters of a capsule.
Carinate: keeled; bearing on the back a sharp longitudinal ridge.
Cariopsis, 95.
Carpel: a single pistil, or one of the parts of a compound pistil.
Carpellary: pertaining to a carpel.
Carpophore: Flora, p. 157.
Cartilaginous: hard and tough.
Caruncle: an appendage of the hilum.
Caudate: tailed.
Caudex, 17.
Caulescent: furnished with a stem.
Cauline: pertaining to the stem.
Cell: one of the cavities of the fruit or of the anther, &c.
Celled: divided into cells.
Cellular Tissue, 3.
Centrifugal Inflorescence, 48.
Centripetal Inflorescence, 48.
Chaff: thin scales or bracts.
Chaffy: furnished with chaff, or of the texture of chaff.
Chalaza, 82.
Channelled: with a deep longitudinal furrow.
Character: a phrase employed to distinguish a genus, &c. from all others.
Chartaceous: of the texture of paper.
Chlorophyll: the green matter of leaves, &c.
Ciliate: fringed with a row of hairs.
Circinate: rolled inward at the apex.
Circumscissile, 89.
Cirrhose: bearing tendrils; tendril-like.
Clasping: enclosing by its base, as a leaf the stem.
Clavate: club-shaped.
Claw: the stalk of a petal.
Clawed: raised on a claw.
Climbing: clinging to other objects for support.
Club-shaped: terete and gradually thickened upward.
Clustered: crowded.
Coated Bulb, 21.
Cobwebby: bearing fine loose hairs.
Cochleate: coiled like a snail-shell.
Coherent: growing together.
Column: the axis of a compound pistil; the united stamens of the Mallow Family; the united stamens and pistil of the Orchis Family.
Commissure: Flora, p. 157.
Comose: bearing a coma, 99.
Compound: composed of similar simple parts, 36.
Compressed: flattened.
Cone: the scaly fruit of the Pine.
Confluent: running together.
Conglomerate: heaped together.
Conical: cone-shaped.
Connate: growing together at the base, as opposite leaves around the stem.
Connective, 71.
Connivent: brought near together.
Continuous: in one piece; not jointed.
Contorted: twisted; bent.
Contorted æstivation: see Convolute.
Contracted: narrowed; not spreading.
Convolute, 68.
Cordate: heart-shaped.
Coriaceous: of the texture of leather.
Corm, 20.
Corneous: hard like horn.
Corniculate: bearing a horn or spur.
Corolla, 64.
Corymb, 56.
Corymbose: branched like a corymb; arranged in corymbs.
Costate: ribbed.
Cotyledons, 104.
Creeping: prostrate, and rooting.
Crenate: having sharp notches on the edge separated by rounded teeth.
Crenulate: slightly crenate.
Crested: bearing an elevated ridge.
Crown: an appendage of the corolla at the base of the limb.
Crowned: bearing anything at the apex.
Cruciform: shaped like a cross.
Crustaceous: hard and brittle, like a shell.
Cryptogamous Plants, 107.
Cucullate: see Hooded.
Culm, 16.
Cuneate: wedge-shaped.
Cup-shaped: shaped like a bowl or cup.
Cuspidate: ending abruptly in a sharp point.
Cuticle 31.
Cylindrical: round and of nearly equal thickness.
Cyme, 60.
Cymose: arranged in a cyme.

Decandrous: having ten stamens.
Deciduous: falling off at, or before, the close of the season.
Declining: leaning to one side.
Decompound: several times divided.
Decumbent: prostrate, but ascending at the summit.
Decurrent: with the edges extending below the main point of attachment.
Definite: few; a number easily counted.
Definite Inflorescence, 48.
Deflexed: bent downward.
Dehiscence: the manner in which closed organs regularly open.
Dehiscent: opening regularly.
Deltoid: triangular.
Dentate: having sharp notches on the edge separated by coarse and spreading teeth.
Denticulate: slightly toothed.

Depressed: flattened horizontally.
Descending: directed downward.
Diadelphous: collected in two sets.
Diandrous: having two stamens.
Dichlamydeous: having both calyx and corolla.
Dichotomous: forked.
Diclinous, 66.
Dicotyledonous: having two cotyledons.
Didymous: twin.
Didynamous: having four stamens, with two of them longer than the others.
Diffuse: loosely spreading.
Digitate: when the apex of the petiole bears five or more leaflets.
Dimorphous: of two forms.
Diœcious, 67.
Discoid: Flora, p. 184.
Disk, 73. Also the central part of the head of composite flowers.
Dissected: divided into many lobes.
Distichous: two-ranked; placed on opposite sides of the axis.
Distinct: separate.
Divaricate: widely spreading.
Divided: parted nearly to the base.
Dorsal: pertaining to back or outside.
Dorsal Suture, 80.
Downy: bearing soft short hairs.
Drupe, 94.
Drupaceous: with the characters of a drupe.
Duramen, 30.
Dwarf: below the common size.

Eared: see Auriculate.
Echinate: beset with prickles.
Elliptical: in outline twice as long as wide, broadest in the middle, and rounded at each end.
Elongated: unusually long; extended.
Emarginate: notched at the apex.
Embryo, 102.
Emersed: raised out of water.
Endocarp: the inner layer of the pericarp.
Endogenous (stems), 32.
Enneandrous: having nine stamens.
Ensiform: sword-shaped.
Entire: with margins not toothed or divided.
Epigynous, 70.
Epiphytes, 11.
Equilateral: equal-sided.
Equitant (leaves): two-ranked, with their bases clasped one within the other, and their sides facing the horizon.
Erose: with the margin irregularly scalloped, as if gnawed.
Evergreen: lasting through the winter.
Exogenous, 28.
Exserted: protruding out of the surrounding parts.
Exstipulate: without stipules.
Extrorse Anthers, 72.

Falcate: scythe-shaped.
Family, 113.
Fan-shaped: folded or plaited like a fan.
Farinaceous: mealy.
Fascicle: a cluster.
Fascicled: collected in a cluster.
Fastigiate: rising to the same level; flat-topped.
Feather-veined, 41.
Female (flowers): bearing only pistils.
Ferruginous: of the color of iron-rust.
Fertile: bearing fruit.
Fibre, 4.
Fibrous Roots, 8.
Fiddle-shaped: oblong in outline, and contracted in the middle.
Filament, 69. Any thread-like part.
Filamentose: bearing or composed of threads.
Filiform: thread-like.
Fimbriate: with the margin cut into a fringe.
Fistulous: hollow.
Fleshy: soft and juicy.
Flexuous: zigzag; bent outward and inward.
Floating: resting on the surface of the water.
Floccose: bearing tufts of deciduous hairs.
Flora: a systematic description of the plants of a country.
Floral: belonging to the flowers.
Floret: one of the flowers of a cluster.
Flower, 61.
Flowering Plants, 106.
Flowerless Plants, 107.
Foliaceous: leaf-like.
Foliolate: bearing leaflets.
Follicle, 87.
Follicular: like a follicle.
Forked: divided into two branches.
Free: separate; disconnected.
Fringed: see Ciliate.
Frond: the leaf of a Fern.
Fructification: the fruiting state.
Fruit, 84.
Frutescent: shrubby.
Fugacious: continuing for a short time.
Fulvous: tawny.
Funiculus, 82.
Funnel-shaped: gradually dilated upward from a tubular base.
Furrowed: grooved lengthwise.
Fusiform: spindle-shaped; broadest in the middle, and tapering at each end.

Geminate: by pairs.
Geniculate: bent abruptly.
Genus, 113.
Germination, 105.
Gibbous: puffed out.
Glabrous: free from roughness, or hairs.
Glands: small knobs or excrescences.
Glandular: bearing glands.
Glaucous: covered with a minute whitish powder.
Globose: } round; spherical.
Globular: }
Glomerate: collected in a close cluster.

Glumaceous : glume-like, or bearing glumes.
Glumes : the scale-like bracts, &c. of grasses and sedges.
Granular: covered with grains.
Gymnospermous Plants: Flora, p. 431.
Gynandrous, 70.

Habit: the general appearance of a plant.
Habitat: the native situation of a plant.
Hairs: hair-like appendages of the cuticle.
Hairy: furnished with hairs.
Hastate or Halberd-shaped: dilated at the base into two spreading lobes.
Heart-shaped: ovate, with a sinus at the base.
Heptandrous: having seven stamens.
Herb, 26.
Herbaceous, 26; of the color and texture of a leaf.
Herbarium: a collection of dried plants.
Hilum, 100.
Hirsute: beset with coarse hairs.
Hispid: beset with rigid hairs.
Hoary: grayish-white.
Homogeneous: uniform in substance.
Hooded: rolled inward or arched.
Horn: an appendage like a horn.
Horny: of the texture of horn.
Hyaline: thin and nearly transparent.
Hybrid, 112.
Hypogynous, 70.

Imbricated, 68.
Imperfect (flowers), 66.
Incised: cut into notches or lobes.
Included: enclosed; opposed to Exserted.
Incumbent: Flora, p. 24.
Incurved: bending inward.
Indefinite: numerous; not readily counted.
Indefinite Inflorescence, 48.
Indehiscent: not opening.
Indigenous: native to a country.
Induplicate: folded inward.
Indusium: Flora, p. 586.
Inferior: below, 103.
Inflated: puffed out, as if distended with air.
Inflexed: bent inward.
Inflorescence, 47.
Innate (anther), 72.
Inserted on: used in the sense of growing from a part.
Insertion: the mode of attachment.
Internodes, 14.
Interrupted: not continuous; not jointed.
Interruptedly pinnate: with smaller leaflets between the larger ones.
Intervals: Flora, p. 157
Introrse (anthers), 72.
Introduced: brought from another country.
Inverted: turned upside down.
Involucel, 58.
Involucre, 58.
Involute: with the margins rolled inward.
Irregular (flowers), 66.

Jointed : separating across into pieces ; furnished with joints.

Keel: a sharp longitudinal ridge on the back of an organ; Flora, p. 86.
Keeled: see Carinate.
Kidney-shaped : heart-shaped, but the width greater than the length.

Labellum: the odd petal (lip) of the Orchis Family.
Labiate: divided into an upper and lower lobe or lip.
Laciniate: divided into irregular lobes.
Lamellate: formed of thin plates.
Lamina: the blade of a leaf, &c.
Lanceolate: lance-shaped.
Lanuginous: woolly.
Lateral: placed at, or pertaining to the side.
Leaf, 33.
Leaflet, 36.
Leathery: see Coriaceous.
Legume, 88.
Lenticular: like a double-convex lens.
Liber, 31.
Ligulate: strap-shaped.
Ligula: Flora, p. 545.
Limb: the expanded part of a leaf, &c.
Linear : long and narrow, with parallel margins.
Lip: see Labellum and Labiate.
Lobe: one of the parts of a divided body.
Loculicidal, 89.
Lunate: crescent-shaped.
Lyrate: pinnatifid, with the upper lobes enlarged.

Marginal: borne on, or pertaining to, the edge or margin.
Medullary Rays, 30.
Medullary Sheath, 29.
Membranous : of the texture of membrane.
Mericarp: Flora, p. 157.
Micropyle, 100.
Midrib: the prolongation of the petiole through the limb of a leaf.
Monadelphous, 70.
Monandrous: bearing one stamen.
Moniliform: bearing short joints; like a string of beads.
Monochlamydeous: bearing only one row of floral envelopes.
Monocotyledonous, 104.
Monœcious, 67.
Monopetalous : with the petals united into one piece.
Monosepalous : with the sepals united into one piece.
Mucronate: tipped with an abrupt slender point.
Muricate : beset with hard wart-like points.

Naturalized : introduced, but propagating freely by seed.

Necklace-shaped: see Moniliform.
Nectary: any honey-bearing part.
Nerved (leaves), 40.
Netted-veined, 40.
Neutral (flowers): without stamens and pistils.
Nodding: turning outward or downward.
Nodes, 14.
Nodose: knotty.
Nut, 96.
Nutlet: same as Achenium.

Obcordate: inversely heart-shaped.
Oblanceolate: inversely lance-shaped.
Oblique: unequal-sided.
Oblong: narrower than Elliptical, with nearly parallel margins.
Obovate: egg-shaped, with the narrow end downward.
Obtuse: blunt; not pointed.
Ochrea, 38.
Octandrous: having eight stamens.
One-sided: borne one side of the axis.
Opaque: dull.
Opposite: placed directly against each other, as leaves on the stem; placed before, as stamens before the petals.
Orbicular: circular.
Organs, 6.
Orthotropous, 83.
Oval: same as Elliptical.
Ovary, 76.
Ovate: egg-shaped.
Ovoid: a solid with an oval outline.
Ovule, 76.

Palate: a prominence at the throat of some bilabiate flowers.
Palea: Flora, p. 545.
Palmate: hand-shaped; when the lobes or divisions spread from a common centre.
Palmately-veined, 41.
Panicle, 59.
Papery: of the texture of paper.
Papilionaceous (flower): Flora, p. 86.
Papillose: studded with minute wart-like prominences.
Pappus: the limb of the calyx of composite flowers.
Parallel-veined, 40.
Parasitical: supported and nourished by other plants.
Parietal, 81.
Parted: divided nearly to the base.
Partial: pertaining to the parts of a compound organ.
Pectinate: cut into fine parallel lobes.
Pedate: nearly as palmate, but with the lateral lobes divided.
Pedicel, 50.
Pedicelled: raised on a pedicel.
Peduncle, 50.
Peduncled: raised on a peduncle.
Peltate: fixed to the stalk at a point within the margins.
Pendent: hanging, drooping.
Pendulous: somewhat drooping.
Penicillate: see Brush-shaped.
Pentandrous: having five stamens.
Pepo, 91.
Perennial: lasting from year to year.
Perfect Flowers, 66.
Perfoliate: growing around the stem.
Perianth, 65.
Pericarp: the walls of the fruit.
Perigynium: Flora, p. 532.
Perigynous, 70.
Persistent: remaining late, as opposed to deciduous.
Personate: bearing a palate.
Petal, 64.
Petaloid: petal-like; colored like a petal.
Petiole: the stalk of a leaf.
Petioled: borne on a petiole.
Petiolule: the stalk of a leaflet.
Petiolulate: raised on a petiolule.
Phænogamous Plants, 106.
Pilose: beset with stiff straight hairs.
Pinnæ: the primary divisions of a pinnately compound leaf.
Pinnate, 43.
Pinnately divided, 43.
Pinnules: the secondary divisions of a pinnately compound leaf.
Pistil, 74.
Pith, 29.
Pitted: marked with fine indentations.
Placenta, 81.
Plaited, 68; folded lengthwise.
Plumose: feathery.
Plumule, 103.
Pollen, 71.
Pollinia: the pollen-masses of the Milkweed.
Polyandrous: bearing many stamens.
Polypetalous and Polysepalous: applied to a corolla or calyx with separate petals or sepals.
Polymorphous: of various forms.
Pome, 92.
Prickles: sharp and rigid appendages of the cuticle.
Prickly: beset with prickles.
Primine, 82.
Prismatic: angular, with flat sides.
Process: a prominence or projection.
Procumbent: resting on the ground.
Produced: prolonged.
Proliferous: where a cluster of flowers arises out of another cluster.
Prostrate: see Procumbent.
Pubescence: hairiness in general.
Pubescent: hairy or downy.
Pulverulent: covered with fine powder.
Punctate: dotted.
Pungent: ending in an abrupt hard point.
Pyramidal: pyramid-shaped.
Pyriform: pear-shaped.

Quinate: bearing five leaflets.

Raceme, 55.
Rachis, 50.

Rays, 57; the marginal flowers a head or cyme; the partial stalks of an umbel.
Radiate or Radiant: bearing rays; diverging from a centre.
Radical: near or belonging to the root.
Radicle, 103.
Raphe, 83.
Receptacle, 61.
Reclining: leaning or falling to one side.
Recurved: } bent gradually backward.
Reflexed: }
Refracted: bent abruptly backward, as if broken.
Regular: of uniform shape and size.
Reniform: see Kidney-shaped.
Repand: wavy.
Resupinate: turned upside down.
Reticulate: disposed in little spaces, like network.
Revolute: rolled backward.
Rhizoma, 18.
Rhombic or Rhomboidal: diamond-shaped.
Ribs, 33; longitudinal ridges.
Ribbed: bearing ribs.
Root, 7.
Rootlet, 7.
Rootstock, 18.
Rostrate: beaked.
Rotate: wheel-shaped; with a short tube and a spreading limb.
Rudimentary: imperfectly developed.
Rugose: uneven; wrinkled.
Ruminated (albumen): divided into lobes.
Runcinate: same as lyrate, but with the lobes directed backward.
Runner, 23.

Sagittate: arrow-shaped.
Samara, 97.
Scabrous: rough.
Scales: reduced leaves, or any small and thin appendage.
Scaly: beset with scales; of the texture of scales.
Scape, 50.
Scarious: very thin and colorless.
Scurfy: covered with minute scales.
Secund: one-sided.
Seed, 99.
Segment: one of the parts of a divided leaf, &c.
Sepal, 63.
Septicidal, 89.
Serrate: with the margin cut into teeth like a saw.
Serrulate: finely serrate.
Sessile: not raised on a stalk.
Setaceous: bristle-like.
Sheath: the base of a leaf when it is wrapped round the stem.
Sheathing: enclosing the stem like a sheath.
Shield-shaped: see Peltate.
Shrub, 26.
Silicle and Silique, 90.
Silky: clothed with fine appressed shining hairs.
Silvery: white and shining.
Simple: of one piece.
Sinuate: with the margins cut into rounded incisions (sinuses) which are separated by rounded lobes.
Solitary: standing alone.
Sorus: the fruit cluster of ferns.
Spadix, 54.
Spathe, 54.
Spatulate: dilated into a broad and rounded summit, from a slender base.
Species, 111.
Specific: pertaining to a species.
Spike, 52.
Spikelet: a small spike, or a branch of a spike.
Spindle-shaped: see Fusiform.
Spine, 24.
Spiny: armed with spines; spine-like.
Spiral Vessels, 5.
Sporangia: Flora, p. 585.
Spores: Flora, p. 585.
Spur: a hollow appendage of the calyx or the corolla.
Spurred: furnished with a spur.
Squarrose: covered with spreading scales.
Stamen, 69.
Staminate: bearing stamens.
Standard: Flora, p. 86.
Stellate or Stellar: radiating from a common centre.
Stem, 13.
Stemless, 13.
Sterile: unfruitful; imperfect.
Stigma, 78.
Stigmatic: belonging to the stigma.
Stipe: the stalk of an ovary or of a fern-leaf.
Stipel, 38.
Stipellate: furnished with stipels.
Stipule, 38.
Stipulate: furnished with stipules.
Stolon, 22.
Stoloniferous: bearing stolons.
Stomata, 33.
Strap-shaped: long and flat, with parallel margins.
Striate: marked with fine furrows.
Strigose: bristly with rigid appressed hairs.
Strobile, 98.
Style, 77.
Subulate: awl-shaped.
Sulcate: marked with deep furrows.
Suspended: hanging.
Suture, 80.
Syngenesious, 72.
System, 115.

Tap-root, 8.
Tendril, 25.
Terete: cylindrical; round.
Ternate: of three leaflets; three in a whorl.

Testa: the covering of the seed.
Tetramerous: in parts of four.
Tetrandrous: having four stamens.
Thorn, 24.
Throat: the orifice of a tubular corolla, calyx, &c.
Tomentose: clothed with a close velvety pubescence.
Toothed: see Dentate.
Top-shaped: like an inverted cone.
Torose, or Torulose: knotted; knobby.
Torus, 61.
Tree, 26.
Triandrous: having three stamens.
Tribe: a subdivision of an order.
Trichotomous: dividing into three branches.
Trifoliolate: bearing three leaflets.
Truncate: ending abruptly, as if cut off.
Tube: the united part of a calyx or corolla.
Tuber, 19.
Tubercle: a wart-like appendage; Flora, p. 504.
Tubercled: bearing tubercles, or crowned with a tubercle.
Tuberous: like a tuber.
Tubular: shaped like a tube.
Tumid: swelled; thickened.
Tunicated Bulb, 21.
Twin: in pairs; a pair united.
Twining: rising by coiling around a support.

Umbel, 57.
Umbelled: arranged in an umbel.
Umbellet, 57.
Unarmed: destitute of thorns, prickles, &c.
Uncinate: hooked.
Undulate: wavy.
Unequally pinnate, 43.
Unguiculate: clawed.
Unifoliolate: bearing a single leaflet.
Urceolate: urn-shaped; pitcher-shaped.
Utricle, 95.
Utricular: formed like a utricle.

Valve, 85.
Valvate, 68: opening by valves.
Variety, 111.
Vascular Tissue, 5.
Vaulted: arched.
Veins, 33.
Veiny: furnished with reticulated veins.
Veinlets: the ultimate branches of veins.
Venation, 39.
Ventral Suture, 80.
Ventricose: inflated.
Vernation, 34.
Versatile, 72.
Vertical: with the edges directed upward and downward, and the sides facing the horizon.
Vessels, 2.
Vexillum: Flora, p. 86.
Villous: woolly.
Virgate: wand-like; long and slender.
Viscid: clammy; glutinous.
Vittæ: Flora, p. 157.

Waxy: like beeswax.
Wedge-shaped: broad at the summit, and tapering regularly to the base.
Wheel-shaped: see Rotate.
Whorl: a collection of parts arranged in a ring or circle.
Whorled: disposed in a whorl.
Wing: Flora, p. 86; any thin expansion.
Winged: furnished with wings.
Wood, 30.
Woody: of the texture of wood.
Woody Fibre or Woody Tissue, 4.
Woolly: clothed with long and dense soft hairs.

III. ABBREVIATIONS OF THE NAMES OF AUTHORS.

Adans.	= Adanson.	*Good.*	= Goodenough.
Ait.	Aiton.	*Griseb.*	Grisebach.
All.	Allioni.	*Gronov.*	Gronovius.
Andr.	Andrews.	*Haw.*	Haworth.
Arn.	Arnott.	*H. B. K.*	Humboldt, Bonpland, and Kunth.
Aubl.	Aublet.	*Hoff.*	Hoffmann.
Baldw.	Baldwin.	*Hook.*	Hooker.
Bartr.	Bartram.	*Houst.*	Houston.
Beauv.	Palisot de Beauvois.	*Huds.*	Hudson.
Benth.	Bentham.	*Jacq.*	Jacquin.
Bigel.	Bigelow.	*Juss.*	Jussieu.
Boerh.	Boerhaave.	*L. or Linn.*	Linnæus.
Brongn.	Brongniart.	*Lag.*	Lagasca.
Buckl.	Buckley.	*Lam.*	Lamark.
Cass.	Cassini.	*Lehm.*	Lehmann.
Catesb.	Catesby.	*L'Herit.*	L'Heritier.
Cav.	Cavanilles.	*Lindl.*	Lindley.
Chapm.	Chapman.	*Marsh.*	Marshall.
Chois.	Choisy.	*Mart.*	Martius.
Darl.	Darlington.	*Mey.*	Meyer.
DC.	De Candolle.	*Michx.*	Michaux.
A. DC.	Alphonse de Candolle.	*Michx. f.*	Michaux the younger.
Desf.	Desfontaines.	*Mill.*	Miller.
Desv.	Desveaux.	*Mœnch.*	Mœnchausen.
Dew.	Dewey.	*Muhl.*	Muhlenberg.
Dill.	Dillenius.	*Murr.*	Murray.
Ehrh.	Ehrhart.	*Neck.*	Necker.
Ell.	Elliott.	*Nees.*	Nees von Esenbeck.
Endl.	Endlicher.	*Nutt.*	Nuttall.
Engelm.	Engelmann.	*Panz.*	Panzer.
Fisch.	Fischer.	*Pers.*	Persoon.
Forst.	Forster.	*Plum.*	Plumier.
Gært.	Gærtner.	*Poir.*	Poiret.
Gaud.	Gaudin.	*Raf.*	Rafinesque.
Ging.	Gingins.	*R. Br.*	Robert Brown.
Gmel.	Gmelin.	*R. & S.*	Roemer & Schultes.

Rich.	= Richard.	*Tourn.*	= Tournefort.
Salisb.	Salisbury.	*Trin.*	Trinius.
Schk.	Schkuhr.	*Tuck.*	Tuckerman.
Schrad.	Schrader.	*Vent.*	Ventenat.
Schreb.	Schreber.	*Wahl.*	Wahlenberg.
Schw.	Schweinitz.	*Wang.*	Wangenheim.
Scop.	Scopoli.	*Walt.*	Walter.
Shuttlw.	Shuttleworth.	*Wallr.*	Wallroth.
Sulliv.	Sullivant.	*Wendl.*	Wendland.
Torr.	Torrey.	*Willd.*	Willdenow.

IV. SIGNS USED IN THIS WORK.

① An annual plant.
② A biennial plant.
♃ A perennial plant.
° The length in feet; as, "2° long," two feet long.
′ The length in inches; as, "2′ long," two inches long.
″ The length in lines; as, "2″ long," two lines long.
(*) Placed at the end of a specific character, denotes that the species is not well known.

Two adjectives connected by a hyphen denote a form intermediate between the two; as, "ovate-lanceolate," between ovate and lanceolate.

Two figures connected by a dash, as "stem 4°–6° long," denote that the length of the stem varies from four to six feet.

n. sp. } indicate that the species, or genus, is new, or has not been previously
n. gen. } characterized.

V. DIRECTIONS TO THE STUDENT.

Having acquired a general knowledge of the principles of botany, and of the meaning of the peculiar terms employed in the science, the student proceeds to study or analyze plants, with a view to determine their names, and the place they occupy in the system.

His chief difficulty, at the outset, will be to ascertain to which one of the 164 natural orders or families contained in this work the plant he may have in hand belongs. Were he to attempt to compare it with the characters of each order successively, the task would be tedious and discouraging.

To obviate this, and to enable him to refer any unknown plant directly to its proper place in the Flora, some guide, such as is supplied by the following Analysis of the Natural Orders, will be necessary. One or two examples will best explain its use.

Suppose we have in hand a flowering branch of the Linden-Tree or Bass-wood. Turning to the Analysis on page xxix., we compare it, first, with the Series of Phænogamous Plants, with which we find it to agree in having flowers.

Then, dividing the branch across, we see if it is made up of pith, wood, and bark; if the leaves are netted-veined; and if the floral envelopes are in fours or fives. Exhibiting these peculiarities, it doubtless belongs to the Class of Dicotyledonous Plants; although, in consequence of the minuteness of the seed, we have not been able to ascertain the number of the cotyledons.

We next see if the ovules are contained in an ovary. This being clearly the case, it comes under the Subclass of Angiospermous Plants. The double floral envelopes, and the separate petals of the corolla, carry it to the Polypetalous Division.

Our attention is next directed to the insertion of the stamens and petals,—whether on the calyx, or hypogynous. In our plant they are hypogynous. Then, if the stamens are more than twice as many as the petals. They are so in ours. Then, if the leaves are opposite or alternate. In ours they are alternate. Then, if the ovaries are more than one, or solitary and 1-celled, or solitary and 2-many-celled. In ours they are solitary and 5-celled; bringing it under the last alternative. Then, if the stamens are in any way connected

with the petals, or free from them. In ours they are free. Lastly, whether they are united into a tube, or in clusters, or are all separate. In ours they are are united in five clusters, and the sepals are deciduous. This brings our plant to the *natural order*, Liliaceæ, 59, — the number referring to the page of the Flora where the order is described.

Turning to that page, and comparing our plant with the character of the order, we notice their agreement.

We then proceed to find the name of the genus. This is readily done, in this instance, by comparing the plant with the two genera comprised in this order. With the first it will be found to agree in every particular, and therefore we need not carry it further. We find, then, the plant in question to be a species of the genus Tilia, so named by Tournefort, and commonly called *Linden* or *Basswood*.

Again, suppose the plant under consideration to be the common Bear-Grass. Having flowers, it is, of course, *Phœnogamous*. But, cutting across the stem, we find, in the place of pith, wood, and bark, a white mass of cellular tissue, studded with minute points, which are the ends of the divided threads of woody fibre; the veins of the leaf run parallel from the base to the apex; the floral envelopes are in two rows of three each; and the embryo, if examined, will be found to have but one cotyledon. In these respects, our plant differs widely from the Class of Dicotyledonous Plants, and we therefore turn to its alternative, the Class of Monocotyledonous Plants, on page xxxvii. of the Analysis, which, we observe, includes plants possessing these characters.

Our plant, having the floral envelopes double, and not glumaceous, falls under the second heading, marked with two stars (* *).

Proceeding as in the former example, and carefully comparing the plant with the analysis that follows, we see, first, if the ovary is adherent with, or free from, the perianth. In ours it is free. Then, if the perianth is single, or double. In ours it is double. Then, if the calyx and corolla are alike or unlike. In ours they are alike. Then, if the leaves of the perianth are glume-like, or otherwise. In ours they are not glume-like. Then, if the leaves are netted-veined or parallel-veined. In ours they are parallel-veined. Then, if the capsule is 1-celled, or 3 – 6-celled. In ours it is 6-celled. Lastly, if the anthers are introrse or extrorse. In ours they are introrse.

This brings us to the natural order Liliaceæ, described on page 480 of the Flora. It contains ten genera, belonging to three tribes, the characters of which are briefly given in the Synopsis. Our plant, by its capsular fruit, the separate divisions of the perianth, and leafy stem, comes under the third tribe, Tulipaceæ. Of the two sections, marked with a star (*), our plant belongs to the second; having a Palm-like stem. No. 10, Yucca, alone remains; and to it our plant must belong.

Turning to page 485, where this genus is more fully described, we find it to embrace four species, divided into two sections based upon the character of the stem and capsule. The short stem (excluding the scape) and dry capsule of our plant belong to the former. It contains but one species, Y. filamentosa, L., which we therefore find to be the botanical name of the plant in question.

VI. ARTIFICIAL ANALYSIS OF THE NATURAL ORDERS.

Series I. PHÆNOGAMOUS or FLOWERING PLANTS.

Plants furnished with flowers, consisting of stamens and pistils, and producing seeds which contain an embryo plant.

Class I. DICOTYLEDONOUS or EXOGENOUS PLANTS.

Stem composed of bark and pith, with an interposed layer of woody fibre and vessels, and increasing in diameter, in all perennial stems, by the annual deposition of a new layer between the wood and bark. Leaves netted-veined, commonly articulated with the stem. Floral envelopes usually in fours or fives. Cotyledons two, rarely more.

Subclass I. ANGIOSPERMOUS EXOGENOUS PLANTS.

Ovules contained in an ovary, and fertilized by the action of the pollen, through the medium of a stigma. Cotyledons two.

Division I. POLYPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of separate petals.

* *Stamens and petals free from the calyx, hypogynous or nearly so.*

+– *Stamens more than twice as many as the petals.*

		Page
Leaves opposite, entire.		
Leaves dotted. Stamens separate. Stigma small.	HYPERICACEÆ,	38
Leaves dotless. Stamens united below. Stigma radiate-peltate.	CLUSIACEÆ,	42
Leaves alternate.		
Ovaries more than one, each 1-celled.		
Stems woody. Petals 6 or more, in two or more rows.		
Petals imbricated in the bud.		
Anthers 4-celled. Dicœcious vines.	MENISPERMACEÆ,	15
Anthers 2-celled. Flowers perfect.	MAGNOLIACEÆ,	12
Petals valvate in the bud. Fruit pulpy. Albumen ruminated.	ANONACEÆ,	14
Herbs. Ovaries embedded in the top of the large receptacle.	NELUMBIACEÆ,	18
Ovaries borne on the receptacle. Sepals and petals deciduous.	RANUNCULACEÆ,	2
Sepals and petals persistent.	CABOMBACEÆ,	18

Ovary solitary, 1-celled.
- Placenta central. Sepals 2, deciduous. Anthers introrse. PORTULACACEÆ, 43
- Sepals 5, persistent. Anthers extrorse. DROSERACEÆ, 36

Placentæ parietal.
- Calyx persistent. Capsule 3-valved: placentæ 3. CISTACEÆ, 35
- Calyx deciduous. Juice colored. Leaves simple, lobed. PAPAVERACEÆ, 21
- Juice watery. Placenta 1. Leaves 2–3-ternate. CIMICIFUGEÆ, 2
- Juice watery. Placentæ 2. Leaves simple or trifoliolate. CAPPARIDACEÆ, 31

Ovary solitary, 2–many-celled.

Stamens connected with the base of the petals.
- Stamens united in a column. Sepals valvate. MALVACEÆ, 52
- Stamens united in a ring. Sepals imbricated. CAMELLIACEÆ, 60

Stamens free from the petals.
- Stamens united into a tube. Sepals persistent. CLUSIACEÆ, 42
- Stamens united in clusters. Sepals deciduous. TILIACEÆ, 59
- Stamens separate. Ovary 5-celled. Leaves tubular. SARRACENIACEÆ, 20
- Ovary many-celled. Leaves flat. NYMPHÆACEÆ, 19

+ + Stamens twice as many as the petals.

Ovaries more than one.
- Flowers dioœcious. Fruit a drupe. Trees, with pinnate leaves. SIMARUBACEÆ, 67
- Flowers perfect. Fruit dry, indehiscent, 1–3-seeded. Aquatic herbs. CABOMBACEÆ, 18
- Fruit a many-seeded follicle. Fleshy herbs. CRASSULACEÆ, 149

Ovary solitary, 1-celled.
- Leaves alternate. Fruit a legume. Leaves stipulate. LEGUMINOSÆ, 86

Leaves opposite.
- Fruit a capsule, with parietal placentæ. Leaves entire, dotted. HYPERICACEÆ, 38
- Fruit a capsule, with a free central placenta. Leaves dotless. CARYOPHYLLACEÆ, 45
- Fruit a drupe. Shrubs, with trifoliolate dotted leaves. BURSERACEÆ, 67
- Fruit a berry. Herbs, with two peltate lobed leaves. BERBERIDACEÆ, 16

Ovary solitary, 2-celled.
- Flowers irregular: stamens monadelphous. Capsule 2-seeded. POLYGALACEÆ, 82
- Flowers regular: stamens separate. Capsule long, many-seeded. TILIACEÆ, 59

Ovary solitary, 3-celled. Shrubs, with alternate leaves.
- Flowers monœcious. Fruit 3-seeded, 3-valved. Stamens united. EUPHORBIACEÆ, 399
- Flowers perfect. Fruit 3-seeded, 3-winged, indehiscent. CYRILLACEÆ, 272
- Fruit many-seeded, 3-valved. ERICACEÆ, 257

Ovary solitary, 4-celled. Stamens 8.
- Style single. Low fleshy root-parasites, with scale-like leaves. MONOTROPEÆ, 258
- A shrub, with alternate leaves and bractless flowers. CYRILLACEÆ, 272
- Styles 4. Flowers cymose. Capsule 4-lobed, spreading. CRASSULACEÆ, 149

Ovary solitary, 5-celled. Stamens 10.
- Style single. Stamens monadelphous. Leaves alternate, pinnate. CEDRELACEÆ, 62
- Stamens separate. Leaves opposite, pinnate. ZYGOPHYLLACEÆ, 63
- Stamens separate. Leaves alternate, simple. PYROLEÆ, 258
- Styles 5. Cells of the fruit separating into 1-seeded nutlets. GERANIACEÆ, 64
- Cells of the fruit united. Leaves trifoliolate. OXALIDACEÆ, 63

Ovary solitary, 7-celled. Anthers opening by terminal pores. ERICACEÆ, 257

Ovary solitary, 10–12-celled. Leaves opposite, abruptly pinnate. ZYGOPHYLLACEÆ, 63

+ + + Stamens exceeding the petals in number, but not twice as many.

Ovary 1-celled. Petals 4: stamens 6.
- Sepals 2. Flowers irregular. Embryo minute in fleshy albumen. FUMARIACEÆ, 22
- Sepals 4. Flowers regular. Embryo large. Albumen none. CAPPARIDACEÆ, 31

Ovary 2-celled.
- Petals 3. Stamens 8, monadelphous. Anthers 1-celled. POLYGALACEÆ, 82
- Petals 4. Stamens 6. Fruit a silique or silicle. CRUCIFERÆ, 23

Ovary 3-celled. Leaves opposite.
Petals 5. Stamens 9. Leaves simple, dotted. HYPERICACEÆ, 38
Petals 4 – 5. Stamens 7. Leaves palmately 7-foliolate. SAPINDACEÆ, 78
Ovary 3 - 4-celled. Leaves alternate.
Petals 5 – 8. Stamens 10. Fruit indehiscent, 3 – 4-winged. CYRILLACEÆ, 272.

\+ + + + *Stamens (the fertile ones) as many as the petals.*

Ovaries more than one.
Flowers monœcious. Stamens united into a 5-lobed disk. SCHIZANDREÆ, 12
Flowers diœcious. Anthers 4-celled. Leaves simple. MENISPERMACEÆ, 15
Anthers 2-celled. Leaves pinnate, dotted. RUTACEÆ, 66
Flowers perfect. Style terminal. Ovules pendulous. RANUNCULACEÆ, 2
Style lateral. Ovules erect. SURIANACEÆ, 149
Ovary solitary, 1-celled.
Flowers irregular. Fruit a legume. Albumen none. LEGUMINOSÆ, 86
Capsule 3-valved. Albumen fleshy. VIOLACEÆ, 32
Flowers regular.
Flowers monœcious; the fertile ones apetalous. Fruit utricular. EUPHORBIACEÆ, 399
Flowers perfect.
Stamens opposite the petals.
Anthers opening by uplifted valves. BERBERIDACEÆ, 16
Anthers opening lengthwise.
Stamens and petals 3. Stigmas many-parted. CISTACEÆ, 35
Stamens and petals 5.
Leaves a pair, opposite. Capsule 3-valved, few-seeded. PORTULACACEÆ, 43
Leaves alternate, numerous. Capsule 2-valved. BYTTNERIACEÆ, 58
Leaves at the base of a naked stem. Fruit a utricle. PLUMBAGINACEÆ, 278
Stamens alternate with the petals.
Leaves opposite, dotted, exstipulate. Albumen none. HYPERICACEÆ, 38
Leaves opposite or whorled, dotless, stipulate. Albumen present. ILLECEBREÆ, 45
Leaves alternate. Capsule 1-celled.
Leaves compound. Fruit a legume. MIMOSEÆ, 88
Leaves simple. Stamens with sterile ones between. PARNASSIACEÆ, 37
Sterile stamens none. DROSERACEÆ, 36
Ovary solitary, 2-celled. Trees or shrubs.
Fruit a double samara. Leaves simple, opposite. ACERACEÆ, 80
Fruit a single samara. Leaves trifoliolate, alternate. RUTACEÆ, 66
Fruit a berry. Leaves palmately 5-foliolate. VITACEÆ, 70
Fruit a drupe. Flowers perfect, racemose. Stamens 5. CYRILLACEÆ, 272
Flowers diœcious, clustered. Stamens 2. EMPETRACEÆ, 410
Ovary solitary, 3-celled. Stamens united, the alternate ones sterile. GALACINEÆ, 268
Ovaries 4-celled, aggregated into a head. Diœcious. BATIDACEÆ, 411
Ovary 5-celled. Style single. Petals stalked. BYTTNERIACEÆ, 58
Ovary 5-celled, or falsely 10-celled. Styles 5. Petals sessile. LINACEÆ, 62

\+ + + + + *Stamens fewer than the petals.*

Stamens 2. Petals 4, cruciform. Fruit a silicle. CRUCIFERÆ, 23
Stamens 2 – 3. Petals 5. Flowers regular. Leaves opposite. CARYOPHYLLACEÆ, 45
Stamens 4. Petals 5. Flowers irregular. Leaves alternate. KRAMERIACEÆ, 86

* * *Stamens and petals inserted on the calyx, or on a more or less perigynous disk.*

\+ *Calyx not adherent to the ovary.*

++ *Stamens as many as the petals.*

Stamens monadelphous around the stalk of the ovary. PASSIFLORACEÆ, 147
Stamens separate, opposite the petals.
Calyx truncate. Ovules 2 in each cell. Woody vines. VITACEÆ, 70
Calyx valvate. Ovules single in the cells. Trees or shrubs. RHAMNACEÆ, 72

Stamens separate, alternate with the petals.

Herbs. Leaves alternate. Calyx deciduous. Capsule 1-celled. — TURNERACEÆ, 146
Leaves opposite. Calyx persistent. Capsule 2 – 4-celled. — LYTHRACEÆ, 133

Trees or shrubs.

Fruit a double samara. Leaves opposite. Styles 2. — ACERACEÆ, 80
Fruit a drupe. Ovary 1-celled. Albumen none. — ANACARDIACEÆ, 68
Fruit a capsule. Ovary 2 – 5-celled. Seeds with albumen. Capsule fleshy. Seeds arilled. — CELASTRACEÆ, 75
Capsule 3-celled, inflated. Leaves trifoliolate. — STAPHYLEACEÆ, 77
Capsule 2-celled, 2-beaked. Leaves simple. — ESCALLONIEÆ, 151

++ ++ Stamens more numerous than the petals.

Ovaries more than one.

Leaves alternate, stipulate. — ROSACEÆ, 117
Leaves alternate, exstipulate. Succulent herbs. — CRASSULACEÆ, 149
Leaves opposite, exstipulate. Sepals and petals numerous. — CALYCANTHACEÆ, 129

Ovary solitary, 1-celled.

Fruit a drupe. Style arising from the base of the ovary. — CHRYSOBALANEÆ, 118
Style terminal. Ovules pendulous. — AMYGDALEÆ, 118
Fruit a legume. Flowers mostly irregular. — LEGUMINOSÆ, 86

Ovary solitary, 2 – 5-celled.

Style single. Leaves simple, opposite or whorled. — LYTHRACEÆ, 133
Leaves compound, dotted. Petals valvate. — BURSERACEÆ, 67
Leaves compound, dotless. Petals imbricated. — SAPINDACEÆ, 78
Styles 2. Leaves alternate. Fruit a capsule. — SAXIFRAGACEÆ, 151
Leaves opposite. Fruit a double samara. — ACERACEÆ, 80
Styles 2 – 3, each 2 – 3-parted. Capsule 2 – 3-celled. — EUPHORBIACEÆ, 399
Styles 3, entire. Petals clawed. Fruit a drupe. — MALPIGHIACEÆ, 81

+– +– Calyx adherent to the ovary.

Herbs.

Ovary 1-celled. Capsule and 2-lobed calyx circumscissile. — PORTULACACEÆ, 43
Capsule 3-valved. Calyx 5-parted. Leaves rough. — LOASACEÆ, 146

Ovary 2 – 6-celled.

Style single. Anthers opening by a terminal pore. Leaves ribbed. — MELASTOMACEÆ, 131
Anthers opening lengthwise. Leaves ribless. — ONAGRACEÆ, 137

Styles or stigmas 2 or more.

Flowers umbelled. Fruit dry, separating into 2 pieces. — UMBELLIFERÆ, 157
Fruit berry-like, of 2 – 5 nutlets. — ARALIACEÆ, 166

Flowers not umbelled.

Flowers perfect. Fruit capsular. Leaves alternate. — SAXIFRAGACEÆ, 151
Flowers monœcious. Fruit nut-like. Leaves whorled. — HALORAGEÆ, 137

Shrubs or trees.

Leaves opposite.

Fruit dry, variously dehiscent, many-seeded. — HYDRANGEÆ, 151

Fruit indehiscent, 1 – 2-seeded.

Stipules between the petioles. — RHIZOPHORACEÆ, 135
Stipules none. Leaves dotted. Stamens numerous. — MYRTACEÆ, 130
Leaves dotless. Stamens 4. Ovary 2-celled. — CORNACEÆ, 167
Leaves dotless. Stamens 10. Ovary 1-celled. — COMBRETACEÆ, 136

Leaves alternate.

Flowers umbelled. Leaves compound. — ARALIACEÆ, 166

Flowers not umbelled.

Leaves stipulate. Fruit fleshy or baccate, indehiscent. — POMEÆ, 118
Fruit dry, woody, 2-valved. — HAMAMELACEÆ, 156

Leaves exstipulate.

Flowers dioecious. Drupe baccate. Sterile flowers apetalous. — CORNACEÆ, 167

Flowers perfect. Ovary 3-celled. Fruit a 2-winged nut.
Ovary 2 – 5-celled. Fruit a 1 – 5-seeded berry. } STYRACACEÆ, 270
Ovary 1-celled, with two parietal placentæ. GROSSULACEÆ, 145
Ovary 1-celled, with numerous placentæ. CACTACEÆ, 144

Division II. MONOPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of more or less united petals.

* *Calyx free from the ovary.*

+– *Flowers regular.*

++ *Fertile stamens fewer than the lobes of the corolla.*

Fruit a 1-seeded fleshy drupe. Evergreen shrubs or trees. OLEACEÆ, 368
Fruit separating into 2 – 4 nutlets.
Ovary 4-lobed; the style rising from between the lobes. LABIATÆ, 310
Ovary not lobed; the style terminal. VERBENACEÆ, 305
Fruit a 2-celled capsule.
Capsule circumscissile. Leaves alternate, radical. PLANTAGINACEÆ, 277
Capsule 2-valved. Corolla-lobes imbricated in the bud. SCROPHULARIACEÆ, 287
Corolla-lobes twisted in the bud. ACANTHACEÆ, 302

++ ++ *Fertile stamens as many as the lobes of the corolla and opposite them.*

Herbs. Capsule 1-celled, many-seeded. PRIMULACEÆ, 279
Trees or shrubs, rarely herbs.
Anthers introrse. Calyx plaited, glandular. Fruit a utricle. PLUMBAGINACEÆ, 278
Calyx not plaited. Fruit a drupe. Embryo transverse. MYRSINACEÆ, 276
Anthers extrorse. Ovary 1-celled. Flowers racemose. THEOPHRASTACEÆ, 276
Ovary 3 – 8-celled. Flowers clustered. SAPOTACEÆ, 274

++ ++ ++ *Fertile stamens as many as the lobes of the corolla and alternate with them.*

Ovaries 2, separate.
Juice milky.
Stamens united with the stigmas into a mass. ASCLEPIADACEÆ, 361
Stamens separate and free from the stigma. APOCYNACEÆ, 358
Juice not milky. Stems creeping. Utricle 1-seeded. DICHONDREÆ, 341
Ovary solitary.
Fruit indehiscent.
Leaves opposite.
Ovary 2-celled. Drupe 1-seeded. Corolla-lobes long. OLEACEÆ, 368
Ovary 4-celled. Drupe 4-seeded. Corolla-lobes short. VERBENACEÆ, 305
Leaves alternate.
Flowers dioecious. Fruit baccate, 4 – 9-seeded. AQUIFOLIACEÆ, 268
Flowers perfect.
Ovary 2-celled. Corolla plaited or valvate. SOLANACEÆ, 347
Ovary 4-celled. Corolla mostly imbricated in the bud. BORRAGINACEÆ, 328
Fruit a capsule.
Capsule circumscissile. Flowers on a scape. PLANTAGINACEÆ, 277
Capsule dehiscent by valves.
Ovary 1-celled. Leaves lobed, hairy or pubescent. HYDROPHYLLACEÆ, 333
Leaves entire, smooth. GENTIANACEÆ, 352
Ovary 2 – 5-celled.
Stipules membranous or annular between the opposite leaves. LOGANIEÆ, 173

Stipules none.
Capsule few-seeded.
Stems twining. Leaves alternate. / Stems twining. Leaves none. — CONVOLVULACEÆ, 340
Stems not twining. Leaves opposite or alternate. — POLEMONIACEÆ, 337
Capsule many-seeded.
Style single.
Capsule 2-celled. Corolla plaited in the bud. — SOLANACEÆ, 347
Capsule 2-celled. Corolla imbricated in the bud. — SCROPHULARIACEÆ, 287
Capsule 5-celled. Stamens elongated. — ERICACEÆ, 257
Styles 2. Capsule 2-celled. — HYDROLEACEÆ, 336

++ ++ ++ ++ *Stamens more numerous than the lobes of the corolla.*

Leaves compound, stipulate. Fruit a legume. — MIMOSEÆ, 88
Leaves simple.
Flowers dioecious. Ovary 8-celled. Fruit a berry. — EBENACEÆ, 273
Flowers perfect. Stamens numerous.
Stamens united into a column. Anthers 1-celled. — MALVACEÆ, 52
Stamens united in a ring or in clusters at the base. — CAMELLIACEÆ, 60
Flowers perfect. Stamens twice as many as the corolla-lobes.
Corolla-lobes imbricated in the bud. Capsule many-seeded. — ERICACEÆ, 257
Corolla-lobes valvate in the bud. Drupe 1-seeded. — OLACACEÆ, 61

+ + *Flowers irregular.*

Stamens 6. Calyx of 2 sepals. Capsule 1-celled. — FUMARIACEÆ, 22
Stamens (the fertile ones) 2 or 4.
Ovary 1-celled. Stamens 2. Corolla spurred. — LENTIBULACEÆ, 282
Stamens 4. Fruit 1-seeded, reflexed. — PHRYMEÆ, 306
Stamens 4. Fruit many-seeded. Leaves scaly. — OROBANCHACEÆ, 286
Ovary 2-celled.
Albumen copious. Corolla imbricated in the bud. — SCROPHULARIACEÆ, 287
Albumen none.
Placenta with hooked appendages. Corolla twisted in the bud. — ACANTHACEÆ, 302
Placenta not appendaged. Capsule large. — BIGNONIACEÆ, 284
Ovary 4-celled.
Ovary 4-lobed; the style rising from between the lobes. — LABIATÆ, 310
Ovary not lobed. Style terminal. — VERBENACEÆ, 305

* * *Calyx more or less adherent to the ovary.*

Anthers united.
Anthers contorted. Vines climbing by tendrils. — CUCURBITACEÆ, 148
Anthers straight. Flowers in a raceme. Fruit a many-seeded capsule. — LOBELIACEÆ, 253
Flowers in a raceme. Fruit a 1–4-seeded drupe. — RUBIACEÆ, 172
Flowers in a head. Fruit a dry achenium. — COMPOSITÆ, 184
Anthers separate. Leaves opposite or whorled.
Leaves connected by stipules, or whorled. — RUBIACEÆ, 172
Stipules none. Stamens as many as the lobes of the corolla. — CAPRIFOLIACEÆ, 169
Stamens fewer than the lobes of the corolla. — VALERIANACEÆ, 183
Anthers separate. Leaves alternate.
Herbs.
Corolla-lobes valvate in the bud. Capsule opening at the sides. — CAMPANULACEÆ, 256
Corolla-lobes imbricated in the bud. Capsule valvate. — PRIMULACEÆ, 279
Shrubs. Flowers irregular. Stigma within a ciliate cup. — GOODENIACEÆ, 255
Flowers regular. Anthers opening by a terminal chink. — VACCINIEÆ, 257
Flowers regular. Anthers opening lengthwise. — STYRACACEÆ, 270

Division III. APETALOUS EXOGENOUS PLANTS.

Floral envelopes single, consisting of a calyx only, or altogether wanting.

** Amentaceous trees or shrubs. Flowers monœcious or diœcious.*

+ Sterile flowers only in aments.

Leaves simple, stipulate. Involucre scaly. Seed entire. — CUPULIFERÆ, 420
Leaves pinnate, exstipulate. Involucre none. Seed 4-lobed. — JUGLANDACEÆ, 418

+ + Both the sterile and fertile flowers in aments.

Aments globose. Calyx none.
- Fruit 2-beaked, 2-valved, many-seeded. Sterile aments spiked. — HAMAMELACEÆ, 156
- Fruit nut-like, 1-seeded, hairy. Aments single. — PLATANACEÆ, 417

Aments oblong or linear.
- Ovary 1-celled. Drupe 1-seeded. Stipules none. — MYRICACEÆ, 426
- Capsule 2-valved, many-seeded. Seed comose. — SALICACEÆ, 429
- Ovary 2-celled. Fruit dry, angled or winged. — BETULACEÆ, 428
- Fruit enclosed in the confluent berry-like calyx. — MORACEÆ, 414

** * Flowers not in aments.*

+ Calyx and corolla none.

Ovaries 3 – 4, united below. Flowers perfect, spiked. — SAURURACEÆ, 397
Ovary single.
- Involucre none. Capsule 4-celled. Aquatic. — CALLITRICHACEÆ, 398
- Involucre spathe-like. Styles 2. Leaves alternate, parted. — PODOSTEMACEÆ, 399
- Involucre 8 – 12-parted. Style one. Leaves whorled, forked. — CERATOPHYLLACEÆ, 398
- Involucre 4 – 5-toothed, cup-like, containing one fertile flower and several sterile ones, each reduced to a single stamen. — EUPHORBIACEÆ, 399

+ + Calyx herbaceous or corolla-like.

Ovaries more than one.
- Stamens inserted on the calyx. Leaves stipulate. — ROSACEÆ, 117
- Stamens hypogynous. Stipules none.
  - Embryo minute. — RANUNCULACEÆ, 2
  - Embryo and seeds large, curved. — MENISPERMACEÆ, 15

Ovary solitary.
- Calyx adherent to the ovary.
  - Ovary 1-celled.
    - Fruit a 2-valved, many-seeded capsule. — SAXIFRAGACEÆ, 151
    - Fruit indehiscent, 1-seeded.
      - Anthers (and stigma) sessile. Tree parasites. — LORANTHACEÆ, 397
      - Anthers on filaments.
        - Drupe berry-like. Stigma decurrent. — CORNACEÆ, 167
        - Drupe dry. Albumen copious. — SANTALACEÆ, 395
        - Drupe dry. Albumen none. — COMBRETACEÆ, 136
  - Ovary 6-celled, many-ovuled. Calyx tubular. — ARISTOLOCHIACEÆ, 371
  - Ovary 4-celled, many-ovuled. Stigma capitate. / Ovary 3-celled, 3-ovuled. Stigmas 3. Leaves dissected. — ONAGRACEÆ, 137
  - Ovary 2 – 3-celled. Capsule 2-valved. Leaves alternate. — HAMAMELACEÆ, 156
  - Fruit a berry. Leaves opposite. — MYRTACEÆ, 130
- Calyx free from the ovary.
  - Ovary 1-celled.
    - Ovules and seeds numerous.
      - Vines. Fruit berry-like. — PASSIFLORACEÆ, 147
      - Stems erect. Capsule circumscissile. — CELOSIEÆ, 379

Ovule and seed solitary. Leaves stipulate.
- Stipules sheathing. Leaves alternate. — POLYGONACEÆ, 384
- Stipules scarious. Leaves opposite. — ILLECEBREÆ, 45
- Stipules not sheathing nor scarious.
  - Flowers perfect. Achenium 2-lobed, spiny. — PETIVERIEÆ, 374
  - Flowers imperfect.
    - Herbs. Stems twining. Leaves 3 – 5-lobed. — CANNABINACEÆ, 414
    - Stems not twining. Leaves serrate or entire. — URTICACEÆ, 411
  - Trees or shrubs.
    - Juice watery. Flowers single or clustered. — ULMACEÆ, 416
    - Juice milky. Flowers included in a fleshy receptacle. — MORACEÆ, 414

Ovule and seed solitary. Leaves without stipules.
- Stamens more numerous than the calyx-lobes.
  - Anthers opening by valves. — LAURACEÆ, 393
  - Anthers opening lengthwise.
    - Calyx 5 – 6-parted. — POLYGONACEÆ, 384
    - Calyx entire. Berry oval. — THYMELEACEÆ, 395
- Stamens equalling in number or fewer than the calyx-lobes.
  - Flowers with scarious bracts. — AMARANTACEÆ, 378
  - Flowers without scarious bracts.
    - Calyx corolla-like, plaited. — NYCTAGINACEÆ, 372
    - Calyx herbaceous. Styles 2. — CHENOPODIACEÆ, 375

Ovary 2 – 12-celled.
- Leaves whorled.
  - A heath-like shrub Calyx of imbricated scales. — EMPETRACEÆ, 410
  - A prostrate annual. Calyx corolla-like. — MOLLUGINEÆ, 45
- Leaves opposite.
  - Fruit a single samara. Calyx minute, persistent. — FRAXINEÆ, 369
  - Fruit a double samara. Calyx deciduous. — ACERACEÆ, 80
  - Fruit a drupe.
    - Flowers perfect. Stamens on the calyx. — RHAMNACEÆ, 72
    - Flowers dicœcious. Stamens hypogynous. — FORESTIEREÆ, 369
  - Fruit a many-seeded capsule. Herbs. — LYTHRACEÆ, 133
- Leaves alternate.
  - Ovules and seeds 1 – 2 in each cell.
    - Flowers mono-dicœcious. Fruit a drupe or capsule. — EUPHORBIACEÆ, 399
    - Flowers polygamous. Capsule 3 – 4-winged. — SAPINDACEÆ, 78
    - Flowers perfect or polygamous.
      - Fruit a berry. Calyx colored. — PHYTOLACCACEÆ, 374
      - Fruit a samara. Leaves stipulate. — ULMACEÆ, 416
  - Ovules and seeds numerous in the cells. Capsule circumscissile.
    - Capsule 3-celled. Flowers solitary. — PORTULACACEÆ, 43
    - Capsule 5-celled. Flowers cymose. — CRASSULACEÆ, 149

Subclass II. GYMNOSPERMOUS EXOGENOUS PLANTS.

Ovules naked (not contained in an ovary), supported by an open scale or leaf, or else terminating a branch, and fertilized by the direct application of the pollen.

- Stem branching. Leaves simple. — CONIFERÆ, 431
- Stem simple, palm-like. Leaves pinnate. — CYCADACEÆ, 437

Class II. MONOCOTYLEDONOUS or ENDOGENOUS PLANTS.

Stem composed of cellular tissue and scattered bundles of woody fibre and vessels, destitute of proper pith, bark, or concentric layers, and increasing in diameter by the deposition of new fibrous bundles. Leaves mostly alternate, entire, and parallel-veined, commonly sheathing at the base, seldom falling off by an articulation. Floral envelopes usually by threes. Cotyledon single.

** Floral envelopes none. Flowers on a spadix.*

Stemless, floating herbs.
- Plants frond-like, with no distinction of stem and leaves. — LEMNACEÆ, 442
- Leaves clustered, spreading. Flowers axillary. — Pistia in ARACEÆ, 439

Caulescent, leafy, rooting herbs.
- Fruit a berry. Spadix enclosed in a spathe. — ARACEÆ, 439
- Fruit an achenium. Stem immersed, floating. — NAIADACEÆ, 444
- Stem not immersed, erect. — TYPHACEÆ, 443

** * Floral envelopes (perianth) single or double, not glumaceous.*

Ovary adherent to the perianth.
- Stamens and pistil united into a column. Flowers irregular. — ORCHIDACEÆ, 452
- Stamens and pistil separate.
  - Flowers monœcious or diœcious.
    - Flowers enclosed in a spathe in the bud. Aquatics. — HYDROCHARIDACEÆ, 450
    - Flowers without a spathe. Leaves reticulate. Terrestrial vines. — DIOSCOREACEÆ, 474
  - Flowers perfect.
    - Ovary 1-celled. Stamens 3. Leaves minute. — BURMANNIACEÆ, 451
    - Ovary 3-celled. Stamen 1. Flowers irregular. — CANNACEÆ, 465
    - Stamens 3. Anthers extrorse. — IRIDACEÆ, 472
    - Stamens 3 or 6. Perianth woolly or scurfy. — HÆMODORACEÆ, 469
    - Stamens 6. Perianth smooth or hairy. — AMARYLLIDACEÆ, 466

Ovary free from the perianth.
- Perianth single (calyx).
  - Flowers on a spadix. Ovary solitary. — ARACEÆ, 439
  - Ovaries 4. Stem leafy. — NAIADACEÆ, 444
  - Flowers on a scape, spiked. Leaves rush-like. — JUNCAGINEÆ, 447
  - Flowers on axillary peduncles. Leaves oval. — ROXBURGHIACEÆ, 479
- Perianth double (calyx and corolla).
  - Calyx and corolla alike, or nearly so, and glume-like. — JUNCACEÆ, 492
  - Calyx and corolla alike, or nearly so, and not glume-like.
    - Leaves ribbed and netted-veined. Fruit a berry. — SMILACEÆ, 475
    - Leaves parallel-veined.
      - Capsule 1-celled. Stamens, or the fertile ones, three — PONTEDERIACEÆ, 496
      - Capsule or berry 3- (rarely 4 or 6-) celled.
        - Anthers introrse (except Lilium). Style single. Stigmas 3, nearly sessile. — LILIACEÆ, 480
        - Styles 3. Anthers extrorse (except Tofieldia). Styles 3 or 1. — MELANTHACEÆ, 485
  - Calyx and corolla unlike.
    - Ovaries few or numerous, forming achenia in fruit. — ALISMACEÆ, 447
    - Ovary solitary.
      - Palms. Calyx tubular. Leaves fan-shaped. — PALMÆ, 437
      - Epiphytes. Plants scurfy. — BROMELIACEÆ, 470

Herbs. Stamens 6. Leaves 3 in a whorl. Flower single. TRILLIACEÆ, 475
Leaves alternate, sheathing. COMMELYNACEÆ, 497
Stamens 3. Flowers perfect, solitary. Stem leafy. MAYACACEÆ, 498
Flowers perfect, capitate. Scape leafless. XYRIDACEÆ, 499
Stamens 3 or 4. Flowers monœcious, capitate. Scape leafless. ERIOCAULONACEÆ, 502

* * * *Flowers glumaceous, i. e. with scale-like bracts, in place of proper floral envelopes.*

Bracts single. Sheaths closed. Fruit an achenium. CYPERACEÆ, 504.
Bracts by pairs. Sheaths open. Fruit a caryopsis. GRAMINEÆ, 545

Series II. CRYPTOGAMOUS or FLOWERLESS PLANTS.

Plants destitute of proper flowers, and producing, in place of seeds, minute bodies (spores) which do not contain an embryo.

Class III. ACROGENS.

Plants with a distinct stem containing woody and vascular tissue, growing from the apex only.

Fructification borne on the under side of a peltate scale. EQUISETACEÆ, 585
Fructification borne on the back or margins of the leaves (fronds). FILICES, 585
Fructification borne in the axil of small leaves or bracts. LYCOPODIACEÆ, 600
Fructification borne at the base of the leaves. HYDROPTERIDES, 602

FLORA

OF THE

SOUTHERN UNITED STATES.

SERIES I.

PHÆNOGAMOUS OR FLOWERING PLANTS.

VEGETABLES furnished with flowers, consisting of stamens and pistils, and usually floral envelopes of some kind, and producing seeds which contain an embryo.

CLASS I. DICOTYLEDONOUS OR EXOGENOUS PLANTS.

Stem composed of bark and pith, which are separated by an interposed layer of woody fibre and vessels, and increasing in diameter, in all perennial stems, by the annual deposition of new layers between the wood and bark. Leaves reticulate-veined, commonly articulated with the stem. Floral envelopes usually in fours or fives. Cotyledons two, rarely more.

SUBCLASS I. ANGIOSPERMÆ.

Ovules enclosed in an ovary, and fertilized by the action of the pollen, through the medium of a stigma. Cotyledons two.

DIVISION I. POLYPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of separate petals.

ORDER I. RANUNCULACEÆ. (CROWFOOT FAMILY.)

Herbs or climbing shrubs, with a watery acrid juice. Leaves commonly divided, their petioles dilated at the base, without stipules. Flowers regular or irregular. Sepals 3 – 15, distinct, often colored. Petals 5 – 15, deciduous, often wanting. Stamens hypogynous, indefinite. Ovaries distinct, numerous, rarely few or solitary, 1-celled, 1 – many-ovuled. Fruit dry or baccate. Embryo minute at the base of fleshy or horny albumen.

Synopsis of the Genera.

TRIBE I. **CLEMATIDEÆ.** Sepals valvate in the bud, colored. Petals stamen-like or none. Style elongated, persistent. Fruit an achenium. — Chiefly vines. Leaves opposite.

1. ATRAGENE. Petals small and stamen-like.
2. CLEMATIS. Petals none.

TRIBE II. **ANEMONEÆ.** Sepals imbricated in the bud, colored. Petals none. Ovules solitary. Fruit an achenium. — Herbs. Floral leaves often whorled, forming an involucre.

3. ANEMONE. Involucre leaf-like and distant from the long-peduncled flowers.
4. HEPATICA. Involucre calyx-like and close to the flower.
5. THALICTRUM. Flowers panicled and without an involucre (except in No. 1). Achenia ribbed or inflated. Leaves compound.
6. TRAUTVETTERIA. Flowers corymbed. Involucre none. Achenia 4-angled. Seed erect. Leaves simple, lobed.

TRIBE III. **RANUNCULEÆ.** Sepals imbricated in the bud, mostly herbaceous. Petals manifest. Ovules solitary. Fruit an achenium. — Herbs. Leaves alternate.

7. MYOSURUS. Sepals spurred at the base. Achenia spiked. Leaves radical, linear.
8. RANUNCULUS. Sepals spurless. Achenia capitate. Stems leafy.

TRIBE IV. **HELLEBORINEÆ.** Sepals imbricated in the bud, colored. Petals of various forms, or none. Fruit a 1 – many-seeded follicle. Leaves alternate.

9. CALTHA. Petals none. Follicle many-seeded. Sepals yellow. Leaves simple.
10. ISOPYRUM. Petals none. Follicle few-seeded. Sepals white. Leaves compound.
11. AQUILEGIA. Sepals 5, regular. Petals 5, spur-shaped, hollow. Follicle many-seeded. Leaves compound.
12. DELPHINIUM. Sepals 5, irregular; the outer one spurred. Petals 4, small; two of them spurred, the others stalked. Follicle many-seeded. Leaves lobed.
13. ACONITUM. Sepals 5, irregular; the outer one large, hooded, and enclosing two long-stalked, hooked petals; the other petals stamen-like or wanting. Follicle many-seeded. Leaves lobed.
14. ZANTHORHIZA. Flowers regular. Sepals and petals 5; the latter 2-lobed. Follicle 1 – 2-seeded. Shrubby. Leaves compound.

TRIBE V. **CIMICIFUGEÆ.** Sepals imbricated in the bud, colored. Petals small and flat, or none. Fruit a follicle or berry. — Herbs. Leaves alternate.

15. HYDRASTIS. Petals none. Ovaries numerous, forming a head of 1 – 2-seeded berries. Stems 1-flowered. Leaves simple, lobed.
16. ACTÆA. Petals 4 – 8, entire. Ovary solitary, forming a many-seeded berry. Flowers in short oblong racemes. Leaves compound.
17. CIMICIFUGA. Petals 3 – 5, 2-cleft. Ovaries 1 – 8, forming many-seeded follicles. Racemes elongated. Leaves compound.

1. ATRAGENE, L.

Sepals 4, colored, membranaceous, spreading, valvate in the bud, deciduous. Petals numerous, stamen-like. Stamens indefinite. Ovaries numerous, 1-ovuled. Achenia capitate, bearing the persistent styles in the form of long plumose-bearded tails. Seed suspended. — Shrubby vines, climbing by the petioles. Leaves opposite, compound, from scaly buds. Flowers solitary, showy.

1. **A. Americana,** Sims. Leaves in opposite pairs, ternate; leaflets stalked, ovate, acute, entire or toothed, sometimes slightly cordate; peduncles opposite; sepals oblong-ovate. — Mountains of North Carolina and northward. April – May. — Flowers 2′ – 3′ in diameter, purple.

2. CLEMATIS, L. Virgin's-Bower.

Petals none. Persistent styles naked or plumose. Otherwise as Atragene. — Herbs or shrubby vines. Leaves simple or compound, opposite. Buds not scaly. Flowers solitary or panicled, often polygamous or dicœcious.

* *Flowers solitary, nodding: calyx thick or leathery.*

+ *Stems erect, mostly simple, herbaceous.*

1. **C. ochroleuca,** Ait. Silky-pubescent; leaves ovate or roundish, entire, reticulate, nearly sessile, at length smooth above; tails of the achenia (1½′ long) plumose. — Upper districts of Georgia and northward. May – June. — Stems 1° high. Flowers yellowish, 1′ long.

2. **C. Baldwinii,** Torr. & Gray. Stems mostly simple, slender, slightly pubescent; leaves oblong, varying to linear-lanceolate, entire, or with three often divided lobes; peduncles elongated; tails of the achenia (2′ – 3′ long) very slender, plumose. — South Florida. — Stems 1° – 1½° high. Peduncles 8′ – 10′ long. Flowers purple, yellowish within, the sepals woolly on the margins.

+ + *Stems climbing, herbaceous.*

3. **C. ovata,** Pursh. Smooth; stems erect or climbing; leaves broadly ovate, short-petioled, reticulate, glaucous beneath, the lowest sometimes compound or cordate; sepals ovate, acuminate, pubescent on the margins; tails of the achenia very long, plumose. — Mountains of Georgia, Carolina, and Tennessee. — Flowers purple ?, inclined. — Probably a form of the next. (*)

4. **C. Viorna,** L. Smoothish; leaves pinnate; leaflets 5 – 7, oval, or oblong-ovate, mostly acute, somewhat membranaceous, entire or 2 – 3-lobed, the lowest pair often ternate; calyx ovate; sepals ovate, tapering into a short recurved point, not margined, rather longer than the stamens; tails of the achenia (1½′ long) plumose. — River-banks. May – August. — Flowers nodding. Sepals thick, reddish purple, 1′ long.

5. **C. crispa,** L. Stem sparingly pubescent; leaves pinnate; leaflets 5 – 7 ovate, thin, 3-lobed or ternate; those of the upper leaves entire, of the lowest lanceolate or linear; calyx campanulate; sepals lanceolate, acuminate, twice as long as the stamens, the margins broad and wavy; tails of the achenia (1′ long) rigid; silky-pubescent. (C. Walteri, *Pursh.* C. cylindrica, *Sims.* C. line-

ariloba, *DC.*, an early state, when all the leaflets are linear.) — Swamps and banks of rivers. May and June. — Stems 2° – 4° high, somewhat shrubby at the base. Flowers 1′ – 1½′ long, pale bluish-purple.

6. **C. reticulata,** Walt. Smooth; leaves pinnate; leaflets 7 – 9, oval, entire or 2 – 3-lobed, obtuse or mucronate, coriaceous, strongly reticulated; calyx ovate; sepals ovate-lanceolate, with spreading tips, not margined, longer than the stamens; tails of the achenia (1½′ long) slender, plumose. — Dry sandy soil, Florida to South Carolina. May – July. — Calyx downy, dull purple.

* * *Flowers panicled: calyx thin, spreading, white: stems woody.*

7. **C. Virginiana,** L. Smooth; leaves ternate; leaflets ovate or cordate-ovate, lobed or toothed; panicle trichotomous, many-flowered, leafy; flowers diœcious or polygamous; sepals obovate, smoothish; tails of the achenia long, plumose. — Swamps and meadows. July. — Leaflets 2′ – 3′ long.

8. **C. Catesbyana,** Pursh. Pubescent; leaves biternate; leaflets ovate, mostly cordate, 3-toothed or lobed; panicle leafy, many-flowered, the branches divaricate, opposite, 3 – 5-flowered; flowers diœcious; sepals oblong, hoary; tails of the achenia plumose. — Dry sandy soil, near the coast, Florida to South Carolina, and westward. July. — Stem climbing high. Leaves and flowers smaller than the last.

9. **C. holosericea,** Pursh. Silky-pubescent; leaves ternate; leaflets oblong-lanceolate, entire; flowers diœcious, in paniculate corymbs; sepals linear, longer than the stamens; tails of the achenia very long, plumose. — South Carolina, Walter. — Flowers small, white. (*)

3. ANEMONE, L. Wind-flower.

Sepals 4 – 20, colored, imbricated in the bud, deciduous. Petals none. Stamens indefinite. Filaments filiform. Ovaries numerous. Ovule solitary. Achenia capitate, compressed, pointed by the short, naked or woolly, straight or hooked, persistent style. Seed suspended. — Perennial herbs, with naked stems, bearing at the summit 2 – 3 opposite or whorled and divided leaves, which form an involucre remote from the flower. Radical leaves lobed or divided.

1. **A. nemorosa,** L. (Wood Anemone.) Smooth or pubescent; stem 1-flowered; leaves of the involucre 3, long-petioled, 3-parted, the divisions ovate-lanceolate, lobed and toothed, longer than the peduncle; sepals 4 – 6, oval, white; achenia 15 – 20, pointed by the hooked persistent style. — Open woods along the mountains and northward. March – April. — Stems 4′ – 6′ high. Radical leaf solitary.

2. **A. Caroliniana,** Walt. (Carolina Anemone.) Stem slender, 1-flowered; peduncle many times longer than the small, sessile, 3-leaved, 3-toothed involucre; radical leaves 2 – 3, long-petioled, ternate, deeply parted, lobed and toothed; sepals 14 – 20, oblong, white; achenia numerous in a cylindrical-oblong head, woolly. — North Carolina and westward. March. — Stems 6′ – 12′ high. Flowers 1′ in diameter.

3. **A. Virginiana,** L. (VIRGINIA ANEMONE.) Stem hairy or woolly, at length many-flowered; peduncles elongated, the earliest one simple; lateral ones several times forking, and bearing a 2-leaved involucre and a single flower at each joint; proper involucre 3-leaved, the leaves long-petioled, 3-parted, with ovate or oblong lobed and toothed divisions; sepals 5, oval, greenish, acute; achenia numerous, in an oblong head, woolly. — Open woods in the upper districts, and northward. July – September. — Plant 2° – 3° high. Flower 8″ – 9″ in diameter. Radical leaves 3 – 4, similar to the involucre.

4. HEPATICA, Dill. LIVER-LEAF.

Flowers and fruit as Anemone. Involucre close to the flower, 3-leaved, resembling a calyx; its leaves sessile, ovate, entire. — A low, perennial herb, with scape-like, 1-flowered stems, and 3-lobed, long-petioled, cordate, persistent, radical leaves.

1. **H. triloba,** Chaix. Lobes of the leaves rounded, entire; stems hairy; flowers purplish or white; achenia oblong, hairy. — Shady woods, Florida and northward. February – March. — Stems 3′ – 6′ high.

5. THALICTRUM, Tourn. MEADOW-RUE.

Sepals 4 – 10, imbricated in the bud, colored, spreading, deciduous. Petals none. Stamens numerous. Filaments filiform, clavate or flattened. Ovaries 3 – 15, 1-ovuled. Achenia sessile or stalked, furrowed or inflated, pointed by the sessile persistent stigma or short style. Seed suspended. — Perennial herbs. Leaves compound.

* *Flowers polygamous or diœcious: sepals shorter than the stamens: stigma elongated: achenia nearly sessile, ribbed: leaves alternate, decompound: involucre none: flowers small, panicled.*

1. **T. dioicum,** L. Stems erect; leaves long-petioled; leaflets thin, roundish, crenately 5 – 7-lobed, smooth; flowers numerous; sepals greenish; stamens and stigma filiform; achenia sessile, or (in var. STIPITATUM, *Torr. & Gray*) distinctly stalked. (T. rugosum & T. Carolinianum, *DC.*) — Mountains of North Carolina and northward. July – August. — Stem 1° – 1½° high.

2. **T. debile,** Buckl. Stems low (8′ – 12′), procumbent or ascending, much branched; leaves long-petioled; leaflets small, stalked, rounded, crenately lobed, smooth; flowers few on axillary or terminal peduncles; achenia oblong, strongly ribbed, short-stalked, as long as the slender style. — Rich woods, near Allenton, Wilcox County, Alabama (*Buckley*). March and April. — Stems branching at the base, slender.

3. **T. Cornuti,** L. Radical leaves long-petioled; stem-leaves sessile (the common petiole wanting); leaflets thick, oval or oblong, 3-lobed or entire, often cordate, smooth, or pubescent beneath; sepals white; stamens and stigma slightly clavate; achenia short-stalked. (T. revolutum, *DC.*) — Meadows and woods, Florida and northward. June – August. — Stems 3° – 4° high. Radical leaves very large. Leaflets varying greatly in size.

* *Flowers perfect: sepals longer than the stamens: stigma short: achenia raised on a stipe, inflated, veiny: leaves ternate or biternate, alternate: flowers few, panicled.*

4. **T. clavatum,** DC. Stems slender, sparingly branched, naked below; leaves petioled, biternate; leaflets thin, rounded, crenately lobed, glaucous beneath; panicle corymbose, few – many-flowered; flowers small, white; achenia 5 – 10, somewhat crescent-shaped, short-pointed, long-stalked. — Mountains of North Carolina to Alabama. July. — Stems 1° – 2° high.

5. **T. nudicaule,** Schweinitz. Stem slender, naked below, sparingly branched above; radical leaf solitary, long-petioled, biternate; stem-leaves very small, ternate; leaflets thin, roundish, obtusely lobed, slightly cordate; panicle 4 – 8-flowered; flowers minute, greenish; ovaries short-stalked. — Banks of the Yadkin River, North Carolina. — Stem 2° high. (*)

* * * *Flowers perfect: sepals longer than the stamens: stigma depressed: achenia sessile, ribbed: stem-leaves whorled: flowers umbelled.*

6. **T. anemonoides,** Michx. Radical leaves biternate, long-petioled; leaflets oval or roundish, cordate, 3 – 5-lobed; stem-leaves 2 – 3, sessile, ternate; the long-stalked leaflets forming an involucre apparently of 6 – 9 simple leaves; umbel 3 – 6-flowered; sepals 6 – 10, white. — Woods, Florida to Mississippi, and northward. April and May. — Root tuberous. Stems 6′ – 10′ high. Flowers $\frac{1}{2}'$ – $\frac{3}{4}'$ in diameter.

6. TRAUTVETTERIA, Fisch. & Mey.

Sepals 3 – 5, orbicular, imbricated in the bud, colored, caducous. Petals none. Stamens indefinite; filaments clavate. Ovaries numerous, 1-ovuled. Stigma recurved. Achenia capitate, gibbous, 4-sided, beaked by the hooked persistent stigma. Seed erect. — Erect, perennial herbs, with alternate, palmately-lobed leaves, and corymbose flowers.

1. **T. palmata,** Fisch. & Mey. Smooth; stem (2° – 4° high) simple or sparingly branched above; leaves uniform, reticulate, divided into 5 – 9 lanceolate, toothed and serrate lobes; those of the root broad (4′ – 6′), long-petioled; corymb many-flowered. — Margins of mountain streams, Georgia, Tennessee, and northward.

7. MYOSURUS, L. Mouse-tail.

Sepals 5 – 7, imbricated in the bud, spurred at the base. Petals 5 – 7, linear-spatulate. Stamens 5 – 20: filaments filiform. Ovaries numerous, 1-ovuled. Style subulate. Achenia 3-angled, imbricated on the filiform, elongated receptacle. Seed suspended. — Small annuals, with linear radical leaves, and small, solitary, yellowish flowers, on a naked scape.

1. **M. minimus,** L. Scapes 2′ – 6′ long, longer than the leaves; achenia beakless. — Augusta, Georgia (*Elliott*), and westward. April. — Fruiting-spike linear, 1′ – 2′ long.

8. RANUNCULUS, L. Crowfoot. Buttercup.

Sepals 3 – 5, regular, herbaceous, concave, imbricated in the bud, deciduous. Petals 3 – 10, dilated, flat, furnished with a pit or scale at the narrowed base. Stamens mostly numerous. Filaments filiform. Ovaries few or numerous, 1-ovuled. Style short, subulate. Achenia capitate, compressed, beaked with the smooth, persistent style. Seed erect. — Herbs. Leaves alternate, the radical ones long-petioled. Flowers axillary or somewhat corymbed, white or yellow.

§ 1. *Petals white, with a yellow pit at the base: achenia rugose.*

1. **R. aquatilis,** L. Stems filiform, immersed; leaves petioled, divided into an indefinite number of capillary segments; flowers axillary, remote, long-peduncled. (R. Pantothrix, *DC.*) — Slow-flowing streams in the upper districts. July and August. ♃. — Stems 1° – 2° long. Leaves circular in outline.

§ 2. *Petals yellow, with a small scale at the base.*

* *Achenia muricate: annuals.*

2. **R. parviflorus,** L. Silky-pubescent; leaves small, the lower ones circular, 3-lobed, acutely-toothed; the upper 3-parted or entire; flowers very small; petals 3 – 5, as long as the reflexed sepals; achenia narrowly margined, pointed with the short, recurved style. (R. trachyspermus, *Ell.*) — Waste places. April and May. — Stems erect, branching from the base, 6′ – 12′ high. Leaves rarely 1′ wide.

3. **R. muricatus,** L. Nearly smooth; lower leaves 3-lobed, crenate; petals 5, longer than the calyx; achenia pointed with the broad, straight style, broadly margined. — Waste places around Charleston (*Elliott*). March – April. Introduced. — Stem 12′ – 18′ high.

* * *Achenia smooth: chiefly perennials.*

+ *Leaves undivided.*

4. **R. alismæfolius,** Geyer. Smooth; stems ascending, rooting at the lower joints; leaves lanceolate, acute, denticulate or entire; petals longer than the calyx; achenia in globose heads, tumid, slender-beaked. (R. Flammula, *Ell.* &c.) — Muddy banks and ditches, chiefly in the upper districts. May – July. — Stems 1° – 2° long. Leaves 2′ – 4′ long. Flowers 3″ – 5″ wide.

5. **R. pusillus,** Poir. Smooth; stems several, erect; lowest leaves ovate or roundish, the others lanceolate or linear, entire or denticulate; flowers minute; petals 1 – 5, as long as the calyx; achenia in globular heads, barely pointed. (R. oblongifolius, *Ell.*, a broader-leaved form.) — Muddy banks, Georgia to North Carolina and westward. March and April. — Stem 6′ – 12′ high. Leaves 1′ long. Flowers 2″ wide. Stamens 5 – 9.

+ + *Leaves (at least those of the stem) ternately lobed or divided.*

++ *Petals small, not exceeding the calyx.*

6. **R. abortivus,** L. Smooth; lowest leaves orbicular, cordate, undivided, crenate, those of the stem 3 – 5-parted, with wedge-shaped toothed divisions; the uppermost sessile, 3-parted; petals shorter than the calyx; achenia in globose heads, pointed with a very short recurved beak. — Low grounds. March and April. — Stem 1° – 1½° high.

7. **R. recurvatus,** Poir. Hirsute; leaves all petioled, 3 – 5-lobed; the lobes wedge-shaped, sharply toothed; petals minute, shorter than the calyx; achenia in globose heads, pointed with a long and slender recurved beak. — Low grounds. April and May. — Stem 1° – 2° high.

8. **R. sceleratus,** L. Smooth; leaves 3-parted, with the divisions wedge-shaped, obtusely lobed and toothed; the uppermost sessile; petals as long as the calyx; achenia in oblong or cylindrical heads, pointless. — Ditches and swamps, Charleston (*Elliott*). Introduced from Europe. April and May. — Stems thick, 1° high.

9. **R. Pennsylvanicus,** L. Hirsute; leaves ternate; leaflets long-stalked, 3-parted, the divisions lanceolate, acutely lobed and toothed; petals shorter than the calyx; achenia in oblong heads, pointed with a broad straight beak. — Low grounds in the upper districts. June. — Stem 2° – 3° high. Petioles elongated, very hairy.

++ ++ *Petals much larger than the calyx: achenia in globose heads.*

10. **R. Purshii,** Richardson. Stem floating; immersed leaves divided into very numerous capillary segments, emersed ones reniform, 3 – 5-parted, the lobes variously divided; sepals reflexed; achenia pointed with a short straight beak. — In still water, North Carolina and northward. May – July. — Stems 2° – 4° long.

11. **R. repens,** L. Smooth or hairy; leaves ternate, or the earliest ones 3-lobed; leaflets 3-lobed, toothed; achenia strongly margined, pointed with the broad and straight or slightly-curved beak; stems erect or prostrate, often bearing long runners. — Rich soil, chiefly in the upper districts. Var. γ in the river swamps of the low country. March and April.

Var. β. **hispidus.** Hirsute; stem erect; leaves ample; peduncles long, with the hairs appressed. (R. hispidus, *Mx.* R. Marilandicus and tomentosus, *Poir:* the latter a form with softer pubescence.)

Var. γ. **nitidus.** Smooth or nearly so; stem prostrate (1° – 2° long); leaves and flowers smaller. (R. nitidus, *Muhl.*)

12. **R. palmatus,** Ell. Hirsute with appressed hairs; leaves small (1′ wide), ternate or 3-parted, with the divisions ovate, sparingly toothed, those of the upper leaves lanceolate and entire; achenia strongly margined, straight-beaked. (R. Carolinianus, *DC.*) — Swamps in the pine barrens, Middle Florida to South Carolina, rare. — April and May. Stems 1° high.

13. **R. bulbosus,** L. Hairy; stem erect (1° – 1½° high) from a bulb-like base; leaves ternate; leaflets 3-parted, with toothed lobes; those of the upper leaves lanceolate, entire; flowers large (1′ wide); achenia pointed with a short recurved beak. — Low grounds in the upper districts. Introduced. May.

14. **R. acris,** L. Hairy; stem tall (2° – 3°), branched above; leaves 3-parted, the divisions deeply cut into three wedge-shaped or lanceolate, acutely-toothed lobes; the uppermost 3-parted, with linear entire lobes; achenia pointed with a short recurved beak. — Low waste places, sparingly introduced from Europe.

9. CALTHA, L. Marsh Marigold.

Sepals 4 – 10, regular, flat, colored, imbricated in the bud, deciduous. Petals none. Stamens numerous; filaments filiform. Ovaries 5 – 15, many-ovuled. Stigma sessile. Follicles capitate or whorled, sessile, spreading, many-seeded. — Perennial, smooth herbs, with cordate or reniform undivided leaves, and showy yellow flowers.

1. **C. palustris,** L. var. **parnassifolia,** *Torr. & Gr.* Stem 1-leaved, 1-flowered; radical leaves long-petioled, broadly reniform, sharply toothed; sepals oblong. (C. ficarioides, *Pursh.*) — Cedar swamps, South Carolina (*Pursh*), Tennessee, and northward.

10. ISOPYRUM, L.

Sepals 5 – 6, regular, ovate, colored, imbricated in the bud, deciduous. Petals 5 and minute, or none. Stamens numerous. Ovaries 2 – 20. Ovules few or many, in 1 – 2 rows. Style short, subulate. Follicles sessile, membranaceous. Seed horizontal. — Perennial, smooth herbs, with alternate compound leaves, and solitary white flowers.

1. **I. biternatum,** Torr. & Gr. Stem (6′ – 12′ high) slender, sparingly branched; radical leaves biternate, on long petioles; stem-leaves ternate, nearly sessile; leaflets ovate and obovate, obtusely 3-lobed; petals none; ovaries 1 – 5; follicle 2-seeded. (Enemion biternatum, *Raf.*) — Shady woods, West Florida and westward. April. — Root commonly bearing small tubers. The plant resembles Thalictrum anemonoides in general appearance.

11. AQUILEGIA, L. Columbine.

Sepals 5, regular, ovate, colored, imbricated in the bud, deciduous. Petals 5, prolonged downward into hollow spurs. Stamens indefinite. Filaments filiform, elongated. Ovaries 5, many-ovuled. Follicles sessile, connivent, many-seeded, tipped with the elongated, filiform, persistent styles. Seeds horizontal. — Erect, perennial, branching, leafy herbs, with alternate ternately-compound leaves; those of the root long-petioled. Flowers showy, nodding, solitary, or somewhat corymbed.

1. **A. Canadensis,** L. Stems 2° high, smooth or slightly pubescent; radical leaves biternate, stem-leaves ternate, short-petioled; leaflets roundish or obovate, crenately lobed; flowers scarlet, yellow within; stamens and styles exserted. — Rocky woods, West Florida and northward in the upper districts. April and May.

12. DELPHINIUM, L. Larkspur.

Sepals 5, irregular, colored, imbricated in the bud, deciduous; the outermost larger, and produced backward into a hollow spur; the others flat. Petals 4, dissimilar; the two upper with spurs which are received in the spur of the sepal, the two lower stalked; sometimes (as in the annual Larkspur) all united. Stamens numerous, included; filaments subulate. Ovaries 1 – 5, 1-celled, many-

ovuled. Style subulate. Follicles sessile, short-pointed. Seeds in two rows, horizontal. — Erect herbs, with alternate petioled and palmately divided leaves, and showy flowers in terminal racemes or panicles.

1. **D. azureum,** Michx. Stem mostly simple, downy; leaves 3 – 5-parted, the divisions cleft into 3 – 5-linear, toothed or entire, acute lobes; racemes many-flowered; pedicels and follicles erect; spur slightly curved, twice as long as the calyx. (D. virescens, *Nutt.*, with wider-lobed leaves, and larger greenish flowers.) — Rich soil, Florida and northward. May. ♃. — Stems 1° – 2° high. Leaves 2′ – 3′ wide. Sepals sky-blue, or sometimes whitish, tipped with brown. Lower petals 2-cleft, bearded.

2. **D. tricorne,** Michx. Stem simple, downy; leaves as in No. 1; raceme few-flowered; pedicels and follicles diverging; spur straight, as long as the calyx. — Mountains of North Carolina and northward. April and May. ♃. — Root tuberous. Stems 1° high. Raceme 6 – 12-flowered. Sepals blue. Lower petals 2-cleft and bearded.

3. **D. exaltatum,** Ait. Stem tall, branching and hairy above; leaves large, the lower 3 – 5-parted, the divisions cleft into 2 – 3-lanceolate or oblong coarsely-toothed lobes, the upper 3-parted with sparingly toothed or entire lobes; racemes many-flowered; pedicels diverging; follicles erect; spur straight, rather longer than the calyx. — Mountains of North Carolina and northward. June – August. ♃. — Stem 2° – 4° high. Leaves 4′ – 6′ wide. Sepals blue. Lower petals 2-cleft and bearded, brownish.

D. Consolida, L., the common annual Larkspur of the gardens, is becoming naturalized in some places.

13. ACONITUM, L. Monkshood. Wolfsbane.

Sepals 5, irregular, colored, imbricated in the bud, deciduous; the outermost large and helmet-shaped, the two lateral rounded, the lower smaller and oblong. Petals 2 or 5, the two upper long-stalked, produced backward into a short incurved spur, the three lower minute or wanting. Stamens numerous; filaments short, subulate. Ovaries 3 – 5, 1-celled, many-ovuled. Style subulate. Follicles sessile, short pointed. Seed horizontal, rugose. — Erect or trailing, perennial herbs, with alternate, palmately divided leaves, and showy flowers in terminal racemes or panicles.

1. **A. uncinatum,** L. Stem smooth, vine-like, erect; leaves 3 – 5-cleft, with the lobes ovate-lanceolate, coarsely toothed; raceme few-flowered; flowers large, blue; upper sepal helmet-shaped. — Shady banks of streams among the mountains and northward, rare. June and July. — Stem 2° – 6° long. Leaves rather rigid.

2. **A. reclinatum,** Gray. Stem smooth, reclining; leaves deeply 3 – 7-cleft; the lobes cuneate, acutely toothed; racemes numerous, few – many-flowered, flowers white; upper sepal elongated-conical, soon becoming horizontal. — High mountains of North Carolina. July and August. — Stems 4° – 8° long. Leaves thin.

14. ZANTHORHIZA, Marshall.

Sepals 5, regular, lanceolate-ovate, colored, imbricated in the bud, deciduous. Petals 5, small, gland-like, 2-lobed, short-stalked. Stamens 5 – 10 : filaments short. Ovaries 5 – 10, 1-celled, 2-ovuled. Style subulate, incurved, at length dorsal. Follicles sessile, gibbous. Seed solitary, pendulous. — A smooth trailing shrub with yellow roots. Leaves pinnate, long-petioled. Leaflets 3 – 5, ovate and lanceolate-ovate, incisely lobed and toothed from near the acute base. Flowers small, in slender compound racemes, appearing before (below) the leaves, dark purple.

1. **Z. apiifolia,** L'Her. — Shady banks, Florida, and along the mountains of Georgia and northward. March and April. — Stems 2° – 3° high.

15. HYDRASTIS, L.

Sepals 3, ovate, membranaceous, colored, imbricated in the bud, caducous. Petals none. Stamens numerous : filaments filiform. Ovaries 12 – 20, fleshy, 1-celled, 2-ovuled, ripening into 1 – 2-seeded, capitate, bright crimson berries. Style short. Stigma 2-lipped. — Stem erect from a thick, knotted rhizoma, simple, 1-flowered, leafy above. Leaves broadly cordate, palmately 5 – 7 cleft, the lobes toothed and serrate ; radical one solitary, long-petioled. Stem-leaves 2 – 3, the uppermost sessile under the stalked, greenish-white flower.

1. **H. Canadensis,** L. — Rich shaded soil along the mountains of Georgia and Carolina, and northward. April and May. — Stem 1° high. Leaves 4′ – 9′ wide, hairy when young.

16. ACTÆA, L. Baneberry.

Sepals 3 – 5, ovate, colored, imbricated in the bud, caducous. Petals 4 – 10, spatulate, entire. Stamens numerous ; the filaments filiform. Ovary solitary, 1-celled, becoming a many-seeded berry in fruit. Stigma sessile, 2-lobed. Seed horizontal. — Perennial herbs. Stems simple, bearing one or two twice or thrice ternately compound leaves, and a single oval or oblong raceme of small white flowers.

1. **A. alba,** Bigel. Smooth, or nearly so ; leaves large, 2 – 3-ternate ; leaflets thin, ovate or cordate-ovate, acutely toothed ; pedicels of the fruit very thick, red ; berry white. (A. pachypoda, *Ell.*) — Rocky woods along the mountains of South Carolina (*Elliott*), and northward. May. — Plant 2° high.

17. CIMICIFUGA, L. Bugbane.

Sepals 4 – 5, ovate or orbicular, colored, imbricated in the bud, caducous. Petals 1 – 8, small, stalked, 2-lobed. Stamens very numerous : filaments filiform, elongated. Ovaries 1 – 8, 1-celled, becoming many-seeded follicles in fruit. — Perennial herbs, with large ternately compound leaves, and white flowers in elongated slender racemes.

* *Ovary mostly single : stigma large, depressed : seeds horizontal, smooth.*

1. **C. racemosa,** Ell. (Black Snakeroot.) Leaves thrice ternate ; leaflets ovate or ovate-lanceolate, sharply serrate, the terminal ones mostly

3-lobed; racemes elongated, downy; follicle broadly ovate, sessile. — Woods in the upper districts and northward. July. — Stem 3° – 8° high. Leaflets 2′ long. Racemes 6′ – 12′ long. Flowers fetid.

* * *Ovaries* 3 – 8: *stigma minute: seeds vertical, chaffy.*

2. **C. cordifolia,** Pursh. Leaves twice ternate; leaflets rigid, ovate or cordate-ovate, 2 – 3-lobed, incised and serrate; racemes panicled, elongated; follicles oblong, sessile. — Mountains of North Carolina. September. — Stem 3° – 4° high. (*)

3. **C. Americana,** Michx. Leaves thrice ternate; leaflets thin, ovate, incisely toothed and serrate, the terminal one 3-cleft or 3-parted; racemes panicled, elongated; follicles obovate-oblong, slender-stalked. — Alleghany Mountains, from Georgia northward. August and Sept. — Stems 3° – 4° high.

Order 2. MAGNOLIACEÆ. (Magnolia Family.)

Aromatic trees or shrubs, with simple, alternate, petioled leaves, and regular, solitary, hypogynous flowers. Sepals and petals mostly similar, imbricated in three or more rows in the bud. Stamens distinct or united. Anthers adnate. Ovaries numerous, imbricated or whorled, 1 – 2-ovuled. Fruit fleshy, baccate, or samara-like, distinct, or confluent in cone-like heads. Seed dry or baccate. Embryo minute, at the base of fleshy albumen.

Synopsis.

Suborder I. **WINTEREÆ.** Flowers perfect. Stamens numerous, separate. Ovaries in a single whorl, 1-ovuled, becoming coriaceous follicles in fruit. — Erect shrubs. Leaves entire. Stipules none.

1. ILLICIUM. Leaves evergreen. Flowers nodding.

Suborder II. **SCHIZANDREÆ.** Flowers monœcious. Stamens united. Ovaries imbricated in a head, 2-ovuled, becoming scattered berries in fruit. — Climbing shrubs. Leaves deciduous, often toothed. Stipules none.

2. SCHIZANDRA. Stamens 5, united into a 5-lobed disk.

Suborder III. **MAGNOLIEÆ.** Flowers perfect. Stamens numerous, separate. Ovaries imbricated in a head, 2-ovuled. Fruit fleshy or somewhat woody, in cone-like heads or spikes. — Chiefly trees. Leaves entire. Stipules large.

3. MAGNOLIA. Fruit fleshy, dehiscent, persistent on the receptacle. Anthers introrse.

4. LIRIODENDRON. Fruit woody, indehiscent, samara-like, deciduous. Anthers extrorse.

1. ILLICIUM, L. Anise-tree.

Flowers perfect. Sepals 3 or 6. Petals 9 – 30, in rows of three, spreading. Stamens numerous, with short filaments. Anthers introrse. Ovaries 6 or more in a single whorl, sessile, 1-celled, 1-ovuled. Style subulate, recurved. Follicles coriaceous, spreading, at length 2-valved. Seed ascending. — Smooth anise-scented shrubs. Leaves evergreen, entire, mostly clustered at the summit of the branches, petioled. Stipules none. Peduncles in terminal clusters, 1-flowered, nodding.

1. **I. Floridanum,** Ellis. Leaves oblong-lanceolate, acuminate; petals 20–30, lanceolate and linear, widely spreading, dark purple. — Sandy swamps, Florida and westward. May. — Shrub 6°–10° high. Leaves somewhat fleshy. Flowers flat, 1′ in diameter.

2. **I. parviflorum,** Michx. Leaves lanceolate, acute; petals 6–12, ovate or roundish, concave, yellow. — Southern districts of Georgia and East Florida. May and June. — Flowers smaller than in No. 1.

2. SCHIZANDRA, Michx.

Flowers monœcious. Sepals 5–6, ovate, concave, greenish. Petals 5–6, obovate-oblong, crimson. Stamens 5: filaments united, forming a circular, 5-lobed disk: anther-cells widely separated. Ovaries numerous, 1-celled, 2-ovuled, imbricated in a head, in fruit forming 1–2-seeded berries, which are scattered on the greatly elongated filiform receptacle. — A climbing shrub; with alternate, oblong, membranaceous, deciduous leaves, and small long-peduncled flowers, from axillary buds. Stipules none.

1. **S. coccinea,** Michx. Leaves acuminate, long-petioled, 3′–4′ long, often somewhat toothed; uppermost flowers mostly staminate; berries oval, red. — Shady woods, Florida to South Carolina and westward. May and June. — Stem climbing high.

3. MAGNOLIA, L. Umbrella-tree. Cucumber-tree.

Flowers perfect. Sepals 3, caducous. Petals 6–9, concave, spreading, deciduous. Stamens very numerous: anthers introrse. Ovaries numerous, imbricated, 1-celled, 2-ovuled, forming in fruit a cone-like head of fleshy, 2-seeded, persistent follicles, opening on the back. Seeds berry-like, suspended by a slender cord of spiral vessels. — Aromatic trees or shrubs. Leaves alternate or clustered at the summit of the branches. Flowers large, solitary, terminal. Stipules large, adnate to the petiole, at length deciduous.

** Leaves perennial.*

1. **M. grandiflora,** L. (Magnolia.) Leaves coriaceous, oblong, or obovate, smooth and glossy above, rusty-pubescent beneath, flat or concave; petals mostly 9, obovate, concave, clawed. — Light fertile soil in the middle and lower districts, South Carolina and westward. April and May. — A large tree. Leaves 6′–12′ long. Flowers 6′–9′ wide, white, changing to brown. Cone of fruit oval, 3′–4′ long.

2. **M. glauca,** L. (Sweet Bay.) Leaves coriaceous, lanceolate and oblong, silky-pubescent, at length smooth above, glaucous beneath; petals 9, obovate, concave. — Swamps, Florida and northward. May and June. — A shrub or small tree. Leaves mostly deciduous northward, 4′–6′ long. Flowers 2′ wide, white, very fragrant. Cone of fruit oval, 1′–1½′ long.

*** Leaves deciduous, acute at the base.*

3. **M. Umbrella,** Lam. Leaves clustered at the summit of the branches, obovate-oblong, acute, downy beneath, at length smooth; petals 9, oblong-lan-

ceolate, acute. (M. tripetala, *Michx.*) — Rich soil in the upper districts. May and June. — A small tree, with irregular branches. Leaves 1° – 1½° long, on short petioles. Flowers 4′ – 6′ wide, white. Cone of fruit oblong, 4′ – 6′ long, rose-colored.

4. **M. acuminata,** L. Leaves scattered, oval, acuminate, downy beneath; petals 6 – 9, oblong-ovate, obtuse. — Upper districts, in rich shaded soil. June and July. — A large tree. Leaves 6′ – 9′ long. Flowers 3′ – 4′ wide, dull yellow and greenish. Cone of fruit cylindrical, 2′ – 3′ long.

* * * *Leaves deciduous, auriculate or cordate at the base.*

5. **M. cordata,** Michx. Leaves oval or roundish, slightly cordate, acute, white-downy beneath; petals 6 – 9, oblong, acute. — Upper districts in rich shaded soil. April and May. — A small tree. Leaves 4′ – 6′ long. Flowers 4′ – 5′ wide, yellow. Cone of fruit oblong, 3′ long.

6. **M. Fraseri,** Walt. Leaves clustered at the summit of the branches, spatulate-obovate, smooth on both surfaces, cordate and 2-eared at the base, on slender petioles; petals oblong, obtuse, narrowed and unguiculate at the base. (M. auriculata, *Lam.* M. pyramidata, *Bartr.*) — Rich woods, Florida to Tennessee and westward. May and June. — A small tree. Leaves 8′ – 12′ long. Flowers 6′ wide, white and fragrant.

7. **M. macrophylla,** Michx. Leaves clustered at the summit of the branches, oblong-obovate, cordate or slightly eared at the base, glaucous beneath; petals oblong, obtuse, the inner row narrower. — Shady woods in light soil, Florida to Tennessee: rare. April and May. — A shrub or small tree. Leaves 1½° – 3° long. Flowers 8′ – 12′ wide, white, fragrant. Cone of fruit ovate.

4. LIRIODENDRON, L. Tulip-tree. White Poplar.

Flowers perfect. Sepals 3, reflexed. Petals 6, erect. Stamens numerous: anthers extrorse. Ovaries numerous, imbricated, 1-celled, 2-ovuled, forming in fruit a cone-like head of samaræform, indehiscent, 1 – 2-seeded, deciduous carpels. — A large tree. Leaves angled, truncated. Stipules large, free from the petiole, deciduous. Flowers large, terminal.

1. **L. Tulipifera,** L. Leaves smooth, on slender petioles, mostly rounded at the base, somewhat 3-lobed; the middle lobe appearing as if cut off, leaving a shallow notch; flowers bell-shaped, greenish-yellow, striped or tinged with orange. — Low grounds, Florida and northward. May – June.

Order 3. ANONACEÆ. (Custard-Apple Family.)

Trees or shrubs, with simple, alternate and entire, feather-veined leaves, and solitary, axillary, perfect, hypogynous flowers. Sepals 3. Petals 6, in two rows, deciduous, valvate in the bud. Stamens numerous. Anthers adnate, extrorse, on very short filaments. Ovaries few or many,

distinct or cohering in a mass, baccate in fruit. Seed anatropous, large. Embryo minute, at the base of ruminated albumen.

1. ASIMINA, Adans. Papaw. Custard-Apple.

Petals thick; the three outer ones larger and spreading. Stamens very numerous, crowded on the globular receptacle. Ovaries 3 – 15, sessile, 1-celled, few – many-ovuled, baccate in fruit. Seeds horizontal, enclosed in a thin succulent aril. — Shrubs or small trees. Leaves deciduous. Flowers nodding.

* *Flowers appearing with or before the leaves.*

1. **A. triloba,** Dunal. Leaves oblong-obovate, acuminate, covered with a rusty pubescence, as also the branches when young, at length glabrous; outer petals round-ovate, dark purple, 3 – 4 times as long as the hairy sepals. (Uvaria triloba, *Torr. & Gray.*) — Banks of rivers, Florida and northward. March and April. — A shrub or small tree. Leaves 8′ – 12′ long. Flowers 1′ – 1½′ wide. Fruit oblong, yellow and pulpy when mature, edible.

2. **A. parviflora,** Dunal. Leaves oblong-obovate, abruptly pointed, and like the branches rusty-pubescent, at length smooth; outer petals oblong-ovate, twice as long as the calyx. (Uvaria parviflora, *Torr. & Gray.*) — Dry sandy soil, Florida to North Carolina and westward. March and April. — Shrub 2° – 5° high. Leaves 4′ – 6′ long, thicker than those of the preceding. Flowers ½′ wide, rusty-pubescent, greenish-purple. Fruit oblong or pear-shaped, fleshy, few-seeded.

3. **A. grandiflora,** Dunal. Leaves oblong or oblong-obovate, obtuse, rigid, densely pubescent like the branches when young, becoming smoothish above; outer petals large, round-obovate, many times longer than the sepals; fruit small, obovate, 1 – few-seeded. (A. cuneata, *Shuttl.*) — Sandy pine barrens, Georgia and East Florida. March and April. — A small shrub. Leaves 2′ – 3′ long. Outer petals two inches or more in length, yellowish-white.

* * *Flowers from the axils of present leaves.*

4. **A. pygmæa,** Dunal. Smooth or nearly so throughout; leaves coriaceous, oblanceolate or oblong-wedge-shaped, obtuse; outer petals oblong-obovate, many times longer than the sepals, pale-yellow, the inner ones purple within; fruit cylindrical, pulpy, few-seeded. (A. secundiflora and probably A. reticulata, *Shuttl*, the latter a pubescent form, with smaller (1′ – 2′) oblong leaves and smaller flowers.) — Dry pine barrens, Florida and the lower districts of Georgia. May – July. — Shrub ½° – 3° high. Leaves 2′ – 6′ long, rarely 1′ wide. Flowers ½′ – 3′ wide.

Order 4. MENISPERMACEÆ. (Moonseed Family.)

Climbing shrubby vines, with alternate palmately veined and often lobed leaves, on slender petioles, and small polygamous or dioecious flowers, in axillary racemes or panicles. Stipules none. Sepals and petals mostly alike, in two or more rows, imbricated in the bud. Stamens 6 or

more, hypogynous. Anthers 2 – 4-celled, opening longitudinally. Ovaries 3 – 8, drupaceous in fruit. Seed and embryo curved, the latter large, in thin albumen.

Synopsis.

1. COCCULUS. Sepals, petals, and stamens 6. Anthers 4-celled.
2. MENISPERMUM. Sepals and petals 4 – 8. Stamens 12 – 24. Anthers 4-celled.
3. CALYCOCARPUM. Sepals 6. Petals none. Stamens 12. Anthers 2-celled.

1. COCCULUS, DC.

Flowers diœcious or polygamous. Sepals and petals 6, each in two rows. Stamens 6 : anthers 4-celled, abortive in the fertile flower. Ovaries 3 – 6, 1-celled, 1-ovuled. Stigma subulate, recurved. Drupe baccate, campylotropous. Nut reniform, rugose. Seed conformed to the cavity of the nut. Embryo semicircular. — Leaves ovate or slightly cordate, entire or angularly 3-lobed.

1. **C. Carolinus,** DC. — Woods and thickets, Florida to North Carolina, and westward. June – August. — Pubescent. Stem twining, 10° – 15° long. Leaves very acute, rather rigid. Racemes of the fertile flowers simple, of the sterile compound. Flowers white. Drupe red.

2. MENISPERMUM, L. Moonseed.

Flowers diœcious. Sepals and petals 4 – 8. Stamens 12 – 24 : anthers 4-celled. Ovaries 2 – 4. Stigma dilated, spreading. Otherwise as in Cocculus. — Leaves rounded, angular or lobed, slightly cordate and peltate at the base. Flowers white, panicled.

1. **M. Canadense,** L. — Banks of rivers, chiefly in the upper districts. July. — Stem twining. Sterile panicles elongated. Drupe black.

3. CALYCOCARPUM, Nutt.

Flowers diœcious. Sepals 6. Petals none. Stamens 12 : anthers 2-celled; those of the fertile flower abortive. Ovaries 3, 1-ovuled. Stigma radiate, many-cleft. Drupe oval. Nut smooth, excavated on the inner face. Embryo curved, foliaceous. — Leaves round-cordate in outline, palmately 3 – 5-lobed. Flowers whitish, in compound racemes.

1. **C. Lyoni,** Nutt. (Menispermum Lyoni, *Pursh.*) — Banks of the Apalachicola River, Florida, to Tennessee. May and June. — Pubescent. Stem twining 20° – 50° high. Leaves 4′ – 7′ wide, with acuminate lobes, the lateral lobes wavy or angled. Drupe 1′ long, globose.

Order 5. BERBERIDACEÆ. (Barberry Family.)

Herbs or shrubs, with alternate, petiolate, mostly divided leaves, and perfect, regular hypogynous flowers. Sepals and petals in two or more rows of 2 – 4 each, imbricated in the bud, deciduous. Stamens opposite

the petals when of the same number. Anthers 2-celled, opening by uplifted valves (or lengthwise in Podophyllum). Fruit baccate or capsular. Embryo in the axis of fleshy albumen.

Synopsis.

* Anthers opening by uplifted valves.

1. BERBERIS. Stamens 6. Leaves bristly-serrate. Shrubs.
2. CAULOPHYLLUM. Stamens 6. Leaves compound. Herb.
3. DIPHYLLEIA. Stamens 6. Leaves peltate, deeply 2-cleft and lobed. Herb.
4. JEFFERSONIA. Stamens 8. Scape 1-flowered. Leaves 2-parted. Herb.

* * Anthers opening longitudinally.

5. PODOPHYLLUM. Stamens 12 or more. Flower solitary in the fork of the two peltate, lobed leaves.

1. BERBERIS, L. Barberry.

Sepals 6, orbicular. Petals 6, obovate, often biglandular near the base. Stamens 6, irritable. Stigma circular, depressed. Fruit a 1–9-seeded berry. Seeds erect. — Shrubs with yellow wood. Leaves bristly serrate, often reduced to branching spines. Flowers racemose, yellow. Berries acid.

1. **B. Canadensis,** Pursh. (American Barberry.) Smooth, spiny; leaves obovate, bristly-serrate; racemes nodding, 6–8-flowered; petals notched; berries oval, red. — Upper districts of Georgia and northward. May and June. — Shrub 2°–3° high, with dotted branches.

2. CAULOPHYLLUM, Michx. Blue Cohosh.

Sepals 6, ovate-oblong. Petals 6, thick and gland-like, shorter than the sepals. Stamens 6. Style short. Stigma minute, unilateral. Ovary thin, early ruptured by the two growing seeds, withering. Seeds globose, drupe-like, stalked. Albumen horny. — A smooth perennial herb, with large ternately-compound leaves, and small yellowish-green flowers in a terminal raceme or panicle.

1. **C. thalictroides,** Michx. (Leontice thalictroides, *L.*) — Mountains of South Carolina (*Elliott*) and northward. April. — Plant 1°–2° high, glaucous when young. Radical leaf 3-ternate, on a long petiole; those of the stem (mostly two) sessile, the upper one biternate. Leaflets obovate-wedge-shaped, 2–3-lobed. Panicle few-flowered. Seeds glaucous.

3. DIPHYLLEIA, Michx.

Sepals 6, caducous. Petals 6, oval, flat, larger than the sepals. Stamens 6. Stigma circular, depressed, slightly 2-lobed. Fruit baccate, 2–4-seeded. Seeds erect. — A smooth perennial herb, with two large, alternate, peltate, deeply 2-cleft, lobed and serrate leaves, and a terminal cyme of white flowers.

1. **D. cymosa,** Michx. — Margins of streams on the mountains of North Carolina. May and June. — Stem 1°–2° high. Leaves often 2° in diameter, the divisions 5–7-lobed. Berries blue.

4. JEFFERSONIA, Barton. TWIN-LEAF.

Sepals 4, petal-like, caducous. Petals 8, oblong. Stamens 8. Stigma nearly sessile, 2-lobed. Capsule coriaceous, obovate, many-seeded, opening transversely on the back, near the summit. Seeds numerous, furnished with a fleshy laciniated aril. — A low stemless perennial herb, with long-petioled, 2-parted leaves, and naked scapes, bearing a single white flower.

1. **J. diphylla,** Pers. — Rich shady woods, Tennessee and northward. April. — Lobes of the leaves half-ovate, entire or toothed. Scapes 6′ – 12′ high. Flowers 1′ wide.

5. PODOPHYLLUM, L. MAY-APPLE.

Sepals 6, caducous. Petals 6 – 9, obovate. Stamens twice as many (in our species) as the petals. Anthers opening longitudinally. Stigma large, peltate, sessile. Fruit baccate, many-seeded. Seeds enveloped in a pulpy aril. — A low perennial herb, with the naked stem terminated by two large peltate, 5 – 9-parted, lobed and toothed leaves, with a solitary nodding flower in the fork.

1. **P. peltatum,** L. (MANDRAKE.) — Rich woods, Florida and northward. April and May. — Stems 1° high, the barren ones terminated by a single centrally peltate leaf, smooth. Leaves 4′ – 6′ wide. Flowers 1′ wide, greenish. Berry 1′ – 2′ long, ovoid, yellow, fragrant.

ORDER 6. NELUMBIACEÆ. (NELUMBO FAMILY.)

Aquatic herbs, with large circular centrally peltate floating leaves, and solitary hypogynous flowers on long peduncles. Sepals and petals similar, in several rows, imbricated in the bud, deciduous. Stamens indefinite, the slender filaments prolonged above the linear, adnate, introrse anthers. Ovaries separate, 1-celled, 1-ovuled, imbedded in the flat summit of the large obconical torus, forming large globular nuts in fruit. Stigma nearly sessile, peltate. Seeds suspended. Embryo large. Albumen none.

1. NELUMBIUM, Juss. NELUMBO.

Characters of the order.

1. **N. luteum,** Willd. (WATER CHINQUEPIN.) — Lakes and still water, Florida, near Tallahassee, and northward and westward. Not common. July. — Rhizoma large, creeping. Leaves 1° – 2° wide, depressed in the centre. Flowers 5′ – 6′ wide, pale yellow. Appendage of the anthers linear.

ORDER 7. CABOMBACEÆ. (WATER-SHIELD FAMILY.)

Aquatic perennial herbs, with peltate or dissected leaves, and solitary hypogynous flowers on long axillary peduncles. Sepals 3 – 4, colored

inside. Petals 3–4, withering-persistent. Stamens 6–18: anthers adnate, extrorse. Ovaries 2–18. Ovules suspended. Capsule indehiscent, 1–3-seeded. Embryo minute, at the base of fleshy albumen.

1. CABOMBA, Aublet.

Sepals and petals 3. Stamens 6. Ovaries 2–4. Capsule 1–3-seeded. — Stems filiform, branching. Submerged leaves opposite, divided into numerous filiform flattened segments; floating ones peltate, entire. Flowers small, in the axils of the floating leaves.

1. **C. Caroliniana,** Gray. Floating leaves oblong-linear; flowers white. (Nectris aquatica, *Nutt.*) — Ponds and still water, Florida to North Carolina, and westward. June–August. — Stems 2°–4° long.

2. BRASENIA, Schreber. WATER-SHIELD.

Sepals 3–4, purple inside. Petals 3–4, linear, persistent. Stamens 12–18: anthers exserted. Ovaries 4–18. Capsule 1–2-seeded. — Leaves all peltate and entire, alternate, oval, on long petioles. Flowers axillary, on elongated peduncles, dull purple.

1. **B. peltata,** Pursh. (Hydropeltis purpurea, *Michx.*) — Ponds and slow-flowing streams, Florida and northward. July. — Stem, petioles, and lower surface of the leaves coated with a gelatinous, viscid exudation. Leaves 2′–3′ wide.

ORDER 8. NYMPHÆACEÆ. (WATER-LILY FAMILY.)

Aquatic herbs, with peltate or cordate, entire, floating leaves, and solitary white or yellow flowers on long peduncles. Sepals 4–6, colored inside. Petals numerous, hypogynous or perigynous, imbricated in the bud. Stamens numerous. Ovary many-celled. Ovules numerous, inserted on the partitions. Stigmas radiate or peltate. Fruit baccate, many-seeded. Embryo included in a sac at the extremity of farinaceous albumen.

1. NYMPHÆA, Tourn. WATER-LILY.

Sepals 4, green outside. Petals oblong, inserted into the thin torus which envelops the ovary, the inner ones passing into stamens. Stamens numerous, inserted above the petals, the outer ones petal-like: anthers adnate, introrse. Ovary many-celled. Stigmas as many as the cells, linear, radiating around a globular central gland. Berry globose. Seed enclosed in a membranaceous aril. — Leaves orbicular, cleft at the base to the centre, floating. Flowers on elongated, often spiral peduncles.

1. **N. odorata,** Ait. (POND-LILY.) Rhizoma large, creeping; leaves 6′–12′ wide, entire, the sinus narrow and the lobes acute, or else with an open

sinus and obtuse lobes. (N. reniformis, *Walt.*) — Ponds and still water, Florida and northward. May – June. — Flowers white, 2′ – 4′ wide, fragrant, expanding in the morning. Petioles and peduncles occasionally villous.

2. NUPHAR, Smith. YELLOW WATER-LILY

Sepals 5 – 6, obovate, yellow. Petals 10 – 20, stamen-like, hypogynous. Stamens numerous, at length recurved, persistent. Ovary cylindrical, many-celled. Stigma sessile, circular. Berry oblong. Seeds smooth, without arils — Leaves cordate or sagittate, floating or erect. Flowers yellow, erect.

1. **N. advena,** Ait. (BONNETS. SPATTER-DOCK.) Leaves thickish, cordate, smooth or downy beneath, often emersed and erect, on stout petioles; sepals 6, the outer ones rounded; petals numerous, thick and fleshy, truncate. — In still water, common, flowering through the summer.

2. **N. sagittæfolia,** Pursh. Leaves thin, floating, on slender petioles, oblong, sagittate, smooth; lobes at the base expanding; sepals 6; petals transformed into stamens. — In still water near the coast, Georgia to North Carolina; rare. June – August. — Leaves 1° long, 2′ wide.

ORDER 9. SARRACENIACEÆ. (PITCHER-PLANT FAMILY.)

Perennial marsh herbs, with hollow pitcher or trumpet-shaped leaves, and a naked or bracted scape, bearing few or solitary nodding hypogynous flowers. Sepals 5, colored, persistent. Petals 5, imbricated in the bud, deciduous, rarely wanting. Stamens numerous: anthers adnate, introrse. Ovary 5-celled, many-ovuled. Placentæ central. Style single, 5-cleft, or umbrella-shaped. Capsule 5-celled, many-seeded. Embryo minute at the base of fleshy albumen.

1. SARRACENIA, L. TRUMPET-LEAF. SIDE-SADDLE FLOWER.

Calyx 3-bracted. Petals obovate, drooping or incurved. Style umbrella-shaped, 5-angled; the angles emarginate, and bearing the minute hooked stigmas beneath. Capsule globose, rough, loculicidally 5-valved. — Scape bractless, 1-flowered. Flowers large, purple or yellow. Leaves 1-winged, hairy within, and usually containing water and dead insects.

* *Flowers purple.*

1. **S. purpurea,** L. (HUNTSMAN'S CUP.) Leaves short, spreading, the tube inflated, contracted at the throat, broadly winged; lamina reniform, erect, hairy within, often purple-veined. — Mossy swamps, Florida and northward. April and May. — Leaves 4′ – 6′ long. Scapes 1° high.

2. **S. Psittacina,** Michx. (PARROT-BEAKED PITCHER-PLANT.) Leaves short, spreading; tube slender, broadly winged, marked with white spots, and reticulated with purple veins; lamina globose, inflated, incurved-beaked, almost closing the orifice of the tube. — Pine barren swamps, Florida and Georgia. April and May. — Leaves 2′ – 4′ long. Scapes 1° high.

3. **S. rubra,** Walt. (Red-flowered Trumpet-leaf.) Leaves elongated, erect, slender, narrowly winged, paler above, and reticulated with purple veins; lamina ovate, erect, beak-pointed, tomentose within; flowers reddish-purple. — Sandy swamps in the middle districts, Georgia to North Carolina and westward. May. — Leaves 10′–18′ long, shorter than the scapes.

4. **S. Drummondii,** Croom. Leaves elongated, erect, trumpet-shaped, narrowly winged; lamina erect, rounded, short-pointed, hairy within, and like the upper portion of the tube white, variegated with reticulated purple veins. — Pine barren swamps, Florida to the middle districts of Georgia and westward. April. — Leaves 2° long. Scapes longer than the leaves. Flowers 3′ wide.

* * *Flowers yellow.*

5. **S. flava,** L. (Trumpet-leaf. Watches.) Leaves large, erect, trumpet-shaped, narrowly winged; lamina yellow, erect, orbicular, slender-pointed, tomentose within, reddish at the base, or reticulated with purple veins. — Low pine barrens, Florida to North Carolina and westward. April and May. — Leaves yellowish, 2° long. Lamina 3′–4′ wide. Scapes as long as the leaves. Flowers 4′–5′ wide.

6. **S. variolaris,** Michx. (Spotted Trumpet-leaf.) Leaves erect, trumpet-shaped, broadly winged, spotted with white near the yellowish summit; lamina ovate, concave, arching over the orifice of the tube, hairy and reticulated with purple veins within. — Low pine barrens, Florida to North Carolina and westward. May. — Leaves 6′–12′ long, longer than the scapes. Flowers 2′ wide.

Order 10. PAPAVERACEÆ. (Poppy-Family.)

Herbs with colored juice, alternate exstipulate leaves, and solitary hypogynous flowers. Sepals 2–3, caducous. Petals 4–12, imbricated in the bud, deciduous. Stamens numerous. Anthers introrse. Ovary 1-celled, with parietal placentæ. Capsule many-seeded. Embryo minute, at the base of oily or fleshy albumen.

1. ARGEMONE, L. Mexican Poppy.

Sepals 2–3, hooded or horned. Petals 4–8. Stigmas 4–7, free, radiate. Capsule oblong-obovate, hispid, opening at the summit by 3–6 valves, which separate from the filiform persistent placentæ. Seeds globular, crested, pitted. — Glaucous herbs with yellow juice, sessile, pinnatifid, bristly leaves, and showy white or yellow flowers.

1. **A. Mexicana,** L. Annual; leaves pinnatifid-lobed, bristly and prickly, blotched with white; flowers white or yellow; calyx bristly. — Waste places, apparently native in South Florida. April and May. — Stem branching, 1°–2° high.

2. SANGUINARIA, L. Puccoon. Blood-root.

Sepals 2. Petals 8–12. Stigmas 2. Capsule 2-valved, the valves separating from the filiform persistent placentæ. Seeds crested. — A stemless perennial herb, with orange-colored juice. Rhizoma thick. Leaves reniform, with 5–7 wavy or toothed lobes. Flowers white, solitary at the summit of the naked scape, fugacious.

1. **S. Canadensis,** L. — Rich woods, Florida and northward. March. — Scape 4′–6′ high. Flowers 1′ wide, appearing with the leaves.

The Corn-Poppy (Papaver dubium, L.) is occasionally met with in grain fields and around dwellings.

Order 11. FUMARIACEÆ. (Fumitory Family.)

Smooth herbs with watery juice, alternate compound dissected leaves, without stipules, and irregular flowers. Sepals 2. Petals 4; the two outer or one of them spurred or gibbous at the base; the two inner callous at the apex, and cohering over the stigma. Stamens 6, commonly united in two sets of three each, placed opposite the outer petals, hypogynous: anther of the middle stamen 2-celled, of the lateral ones 1-celled. Capsule 1-celled and 2-valved, with two parietal placentæ, or 1-seeded and indehiscent. Embryo minute in fleshy albumen.

Synopsis.

1. ADLUMIA. Petals united, persistent. — A tender vine.
2. DICENTRA. Petals connivent, deciduous; the two outer ones gibbous at the base. — Stemless herbs.
3. CORYDALIS. Petals distinct, deciduous, one of the outer ones gibbous at the base. — Caulescent herbs.

1. ADLUMIA, Raf.

Sepals minute. Petals united, free at the summit; the two outer ones gibbous at the base, withering-persistent. Capsule linear-oblong, 4–8-seeded. Seeds reniform, not crested. Stigma 2-crested. — A smooth biennial vine. Leaves biternate, with tendril-like petioles. Flowers pale violet, in axillary and drooping panicles.

1. **A. cirrhosa,** Raf. (Corydalis fungosa, *Vent.*) — Mountains of North Carolina and northward. July–September. — Stem 8°–15° long. Leaflets thin, obovate, 2–3-lobed. Corolla thick and spongy.

2. DICENTRA, Bork. Dutchman's Breeches.

Sepals minute. Petals conniving, but scarcely united, deciduous or withering; the two outer ones spurred or gibbous at the base. Filaments slightly united in two sets. Stigma 2-crested. Capsule 10–20-seeded. Seeds crested. —

Stemless perennial herbs, with ternately-compound and dissected leaves. Flowers racemose, nodding.

1. **D. Cucullaria,** DC. Rhizoma granular, bulb-like; scape simple, 4-10-flowered, longer than the (1-3) long-petioled linear-lobed leaves; corolla whitish, with two divergent, wing-like spurs, longer than the pedicel; inner petals minutely crested. — Rich woods, North Carolina and northward. April. — Scape 6′-9′ high.

2. **D. eximia,** DC. Rhizoma granular, scaly; raceme compound, many-flowered, shorter than the (3-8) oblong-lobed leaves; corolla rose-color, 2-gibbous at the base; inner petals conspicuously crested; stigma 2-horned at the apex. — Mountain rocks, North Carolina and northward. June-September. — Scape 8′-12′ high. Bracts purplish.

3. CORYDALIS, Vent.

Sepals minute. Petals separate, deciduous; one of the outer ones sac-like at the base. Filaments united nearly to the summit, with a gland at the base. Stigma 2-lobed. Capsule many-seeded. Seed crested. — Caulescent, annual or biennial herbs, with bipinnate dissected leaves, and flowers in lateral and terminal racemes.

1. **C. aurea,** Willd. Stems diffuse; racemes simple; capsule knotted, drooping; crest of the seeds scalloped; flowers yellow. — Banks of the Apalachicola River (and as an annual weed in gardens), Florida to Mississippi and northward. March and April. — Stems 6′-12′ long. Leaves finely dissected.

2. **C. glauca,** Pursh. Stems erect; racemes compound; capsule even, erect, crest of the seeds entire, flowers whitish, tinged with yellow and reddish. — Mountains of North Carolina and northward. May. — Plant glaucous, 1°-2° high. Divisions of the leaves coarser than the last.

Order 12. CRUCIFERÆ. (Mustard Family.)

Herbs with pungent watery juice, alternate exstipulate leaves, and regular hypogynous racemose or corymbose flowers, on bractless pedicels. Fruit a silique or silicle. — Sepals 4, deciduous. Petals 4, regular, placed opposite each other in pairs, their spreading limbs forming a cross. Stamens 6 (rarely fewer), two of them shorter. Capsule 2-celled by a membranaceous partition which unites the two marginal placentæ, from which the two valves separate at maturity, or indehiscent and nut-like, or separating into 1-seeded joints. Seeds campylotropous, without albumen, filled with the large embryo, which is curved or folded in various ways, or straight only in Leavenworthia. (The genera are distinguished chiefly by the fruit and seed; the flowers being nearly similar throughout the order.)

Synopsis.

I. SILIQUOSÆ. Fruit a silique, few – many-seeded.

* Cotyledons flattened, parallel with the partition, one edge applied to the ascending radicle (accumbent).

+– Valves of the fruit nerveless.

1. NASTURTIUM. Silique short, nearly terete. Seeds in two rows in each cell.
2. IODANTHUS. Silique elongated, terete. Seeds in a single row in each cell.
3. CARDAMINE. Silique linear, compressed. Seeds wingless, in a single row.
4. DENTARIA. Silique lanceolate, compressed. Seeds wingless, in a single row.
5. LEAVENWORTHIA. Silique oblong. Seeds winged. Embryo straight.

+– +– Valves of the fruit 1-nerved.

6. ARABIS. Silique linear, elongated: valves flattened.

* * Cotyledons flat, with one edge turned toward the partition, and the back of one of them applied to the ascending radicle (incumbent).

7. SISYMBRIUM. Silique sessile, nearly terete.
8. WAREA. Silique stalked, compressed. Petals on long claws.

II. SILICULOSÆ. Fruit a silicle.

* Silicle compressed parallel with the broad partition, or globular.

+– Cotyledons accumbent.

9. DRABA. Silicle oval or oblong, many-seeded valves 1 – 3-nerved.
10. VESICARIA. Silicle orbicular, few-seeded: valves nerveless.

+– +– Cotyledons incumbent.

11. CAMELINA. Silicle obovoid: valves 1-nerved.

* * Silicle compressed contrary to the narrow partition. Cotyledons incumbent, rarely accumbent.

12. SENEBIERA. Valves of the silicle globular, rugose: seeds solitary.
13. LEPIDIUM. Valves of the silicle boat-shaped: seeds solitary.
14. CAPSELLA. Valves of the silicle boat-shaped: seeds numerous.

III. LOMENTACEÆ. Fruit separating transversely into joints.

15. CAKILE. Fruit 2-jointed.

1. NASTURTIUM, R. Br. Water-Cress.

Silique nearly terete, linear or oblong, or short and silicle-like, usually curved upward; the valves nerveless. Seeds numerous, small, in two rows in each cell, not margined. Cotyledons accumbent. — Herbs. Leaves pinnately-lobed. Flowers white or yellow, small.

1. **N. tanacetifolium,** Hook. & Arn. Smooth; stems diffuse; leaves pinnately divided, with pinnatifid or toothed lobes; silique oblong-linear, pointed with the short style, twice as long as the pedicel. (Sisymbrium, *Walt.* S. Walteri, *Ell.*) — Damp soil, East Florida to South Carolina, and westward. March and April. — Stems 6′ – 12′ long. Flowers minute, yellow.

2. **N. sessiliflorum,** Nutt. Smooth; stem stout, erect, branching; leaves oblong-obovate, pinnatifid toward the base, toothed above, obtuse; silique linear-oblong, pointed with the very short and thick style, four or five times as long as the pedicel. — Banks of the Apalachicola River, Florida and westward. February – April. ① — Stem 1° – 2° high. Flowers minute, yellow.

3. **N. palustre,** DC. Smooth or hairy; stem erect, branching; leaves clasping, pinnatifid, with toothed lobes; silique short, ovate or oblong-ovate, pointed with the distinct and rather slender style, barely half as long as the spreading pedicel. — Wet places, North Carolina and westward. June – August. — Stem 1° – 2° high. Flowers small, yellowish.

4. **N. lacustre,** Gray. Smooth; stem sparingly branched; immersed leaves pinnately divided into very numerous capillary segments, emersed ones lanceolate, serrate; silique 1-celled, obovate, pointed with the slender style, shorter than the spreading pedicel. — Rivers and cool springs, West Florida, thence northward and westward. July. — Stem 1° – 3° long. Flowers conspicuous, white.

5. **N. officinale,** R. Br. (WATER-CRESS.) Stems spreading and rooting; leaves pinnate, with the leaflets roundish or oblong and nearly entire; silique linear (6″ – 8″ long), on slender spreading pedicels; petals white, twice the length of the calyx. — Ditches, &c., Florida and northward. Introduced.

2. IODANTHUS, Torr. & Gray.

Silique linear, elongated, terete; the valves nerveless. Seeds in a single row in each cell, not margined. Cotyledons accumbent. Claws of the violet-purple petals longer than the calyx. — A smooth perennial, with ovate-oblong pointed and toothed leaves, the lowest sometimes lyrate-pinnatifid, and showy flowers in panicled racemes.

1. **I. hesperidoides,** Torr. & Gray. (Hesperis pinnatifida, *Michx.*) — Banks of rivers, Tennessee and northward. May and June. — Stem 1° – 3° high. Pods 1′ or more long, curving upward.

3. CARDAMINE, L.

Silique linear, flattened; the valves nerveless, usually opening elastically from the base. Seeds several, wingless, disposed in a single row in each cell, suspended by filiform stalks. Cotyledons accumbent. — Herbs. Leaves often undivided. Flowers purple or white.

* *Perennials.*

1. **C. rotundifolia,** DC Smooth; root fibrous; stem erect, simple, soon bearing from the root or upper axils long and leafy runners; leaves oval or orbicular, often cordate, wavy or toothed, the lowest long-petioled and sometimes sparingly pinnatifid; silique subulate, spreading; seeds oval. — Cool springs, in the upper districts and northward. May and June. — Stem 6′ – 12′ high. Runners at length 2° – 3° long. Flowers conspicuous, white.

2. **C. rhomboidea,** DC. Smooth; root tuberous; stem simple, erect, without runners; leaves long-petioled, round-cordate, with wavy margins; the uppermost oblong-ovate, toothed, sessile; silique linear-lanceolate, pointed with the slender style; seeds round-oval. — Cool springs, West Florida and northward. April and May. — Stem 12′ – 18′ high. Flowers white, larger than in No. 1.

* * *Annuals.*

3. **C. spathulata,** Michx. "Radical leaves petiolate, spathulate, entire, pubescent with branching hairs; stem-leaves linear Stem decumbent, silique linear, straight, spreading and slightly reflexed, pointed with the sessile stigma." (*DC.*) — High mountains of Carolina (*Michaux*). (*)

4. **C. Ludoviciana,** Hook. Low; stems branching and hairy at the base; leaves lanceolate, pinnatifid with numerous oblong or linear sparingly toothed lobes, those of the root tufted; silique broadly linear, erect-spreading, pointed with the sessile stigma; seeds orbicular, margined. — Waste places near dwellings, Florida to North Carolina and westward. March and April. — Stems 4′–6′ high. Flowers small, white.

5. **C. hirsuta,** L. Smooth or hairy; stem erect (1°–2° high), branching; leaves pinnatifid, with numerous oval or oblong sparingly toothed lobes, those of the upper leaves linear and entire; silique narrow-linear, erect, pointed with the nearly sessile stigma; seeds oval, minute, marginless. — Var. VIRGINICA. (C. Virginica, *Michx.*) Smaller (6′–10′ high); lobes of the leaves linear or filiform. — Wet (the variety in dry) soil, Florida and northward. March and April. — Flowers small, white.

4. DENTARIA, L. TOOTHWORT.

Silique lanceolate, flattened. Seeds ovate, disposed in a single row in each cell, on flattened stalks, not margined. — Perennial herbs, with creeping fleshy roots, and simple stems, bearing at the summit 2–3 palmately-divided leaves, and a single raceme of large white or purple flowers. Radical leaves on long petioles.

1. **D. diphylla,** Michx. Root not jointed; stem-leaves 2, opposite or nearly so, ternately divided; leaflets ovate or ovate-lanceolate, coarsely toothed; those of the root similar; racemes many-flowered, longer than the leaves; flowers white. — Rich shady woods, along the mountains and northward. April. — Stem 8′–12′ high. Root pungent.

2. **D. laciniata,** Muhl. Root jointed; stem-leaves mostly 3, whorled, ternately divided; leaflets lanceolate or linear, lobed and toothed; the lateral ones 2-parted; those of the root similar or sometimes wanting; racemes few–many-flowered, often shorter than the leaves; flowers white or pale purple. — Banks of rivers in shady places, Florida and northward. Feb.–April. — Stem 4′–12′ high.

3. **D. heterophylla,** Nutt. Root jointed; stem-leaves 2, small, opposite, 3-parted; leaflets linear, toothed or entire; root-leaves ternate, with large ovate crenately-lobed and toothed leaflets; racemes few-flowered; flowers rather small, purple. — Shady woods, North Carolina and northward. April. — Stem 6′–12′ high.

4. **D. multifida,** Muhl. Root tuberous; stem-leaves mostly 3, whorled, 2–3-ternately divided into very narrow segments; flowers white. — Shady woods in the upper districts, Alabama and northward. Stems 6′–8′ high. Leaves often as finely divided as those of the Carrot, sometimes approaching some of the forms of No. 2, but with smaller flowers, and longer petioles and pedicels.

5. LEAVENWORTHIA, Torr.

Silique oblong or oblong-linear, compressed, often contracted between the seeds. Seeds in a single row in each cell, orbicular, flat, winged. Embryo straight or nearly so. — Small annual or biennial herbs, with short 1-few-flowered stems, pinnatifid leaves, and yellow, white, or purplish flowers, on elongated pedicels.

1. **L. aurea,** Torr. Leaves mostly radical, with 4-8 oblong toothed lobes, the terminal one larger and rounded; raceme at length 4-10-flowered; style manifest; embryo straight. — On flat rocks in the upper districts of Alabama and westward. — Plant 2′-6′ high. Flowers yellow.

2. **L. Michauxii,** Torr. Leaves as in No. 1; flowers mostly solitary, on radical peduncles; style almost none; embryo slightly curved. (Cardamine uniflora, *Michx.*) — Rocks, Alabama and Tennessee. — Flowers purplish or white.

6. ARABIS, L.

Silique elongated, linear, flattened; valves 1-nerved. Seeds numerous, in a single row in each cell, roundish, usually winged or margined. Cotyledons accumbent. — Chiefly annual or biennial herbs. Radical leaves mostly pinnatifid; those of the stem sessile and often cordate or sagittate at the base. Flowers white or rose-colored, in terminal racemes.

1. **A. hirsuta,** Scop. Rough-hairy; stems mostly simple, erect, rigid, very leafy; radical leaves oblanceolate, obtuse, mostly entire; those of the stem lanceolate or oblong, clasping, sparingly toothed; silique pedicelled, narrow-linear, erect, pointed with the sessile stigma; seeds narrow-margined. — Rocky or sterile soil, Tennessee and northward. May. ⓘ — Stems 1°-2° high, often several from one root. Leaves ½′-1′ long. Flowers small, the greenish-white petals rather longer than the calyx.

2. **A. patens,** Sulliv. Downy with spreading hairs, erect (1°-2° high); stem-leaves oblong-ovate, acutish, coarsely toothed or the uppermost entire, half-clasping by the heart-shaped base; petals (bright-white) twice the length of the calyx; pedicels slender, spreading; silique slender and curving upward, tipped with a distinct style. — Rocky banks near Nashville, Tennessee, and northward. May. — Silique 1½′-2′ long.

3. **A. dentata,** Torr. & Gray. Pubescent and roughish; stems slender, diffusely branched, erect or ascending; leaves obtuse, unequally and sharply toothed, the lowest (2′-5′ long) oblong-obovate, tapering into a slender petiole; the others smaller, oblong, clasping and auriculate at the base; racemes at length elongated; siliques scattered, narrow-linear, widely spreading, on short pedicels; petals whitish, scarcely exceeding the calyx. — Tennessee and northward. May. —Plant about 1° high. Silique 1′ long.

4. **A. lyrata,** L. Stem smooth, branching from the base; radical leaves tufted, pinnatifid, ciliate, those of the stem linear or lanceolate and entire; silique pedicelled, very narrow, erect-spreading, pointed with the short style; seeds without margins. — Mountains of North Carolina and northward. April-June. — Stems 4′-10′ high. Flowers white, the petals twice the length of the calyx.

5. **A. Canadensis,** L. Stem stout, simple, nearly smooth above; leaves thin, downy, lanceolate, slightly toothed, sessile by a narrow base, the lowest coarsely or pinnatifid-toothed; siliques curved, drooping, on rough pedicels; seeds winged. (A. falcata, *Michx.*) — Dry or rocky places in the upper districts. May and June. — Stems 2° – 3° high. Silique 2′ – 3′ long. Flowers white. Petals oblong-linear, not twice the length of the hairy calyx.

6. **A. lævigata,** DC. Smooth and glaucous; stem erect; leaves linear or lanceolate, entire or sparingly toothed, sagittate and clasping at the base; pedicels short; petals (whitish) narrow, slightly exserted; silique elongated, narrow-linear, recurved-spreading; seed winged. — Rocky places, North Carolina, Tennessee, and northward. May. — Stem 1° – 2° high. Silique 2′ – 3′ long.

7. SISYMBRIUM, L. Hedge-Mustard.

Silique linear or oblong, terete or somewhat angled, with 1 – 3-nerved valves. Seeds in a single row in each cell, oblong, marginless. Cotyledons linear-oblong, incumbent. — Herbs with simple or pinnately divided leaves. Flowers in racemes, small, white or yellow.

1. **S. canescens,** Nutt. Pubescent and somewhat hoary; stem simple or sparingly branched; leaves bipinnatifid, with small mostly toothed lobes; racemes at length elongated; silique shorter than the spreading pedicel. (Cardamine? multifida, *DC.*) — Waste ground, Florida, northward and westward. March and April. ① — Stem 1° – 2° high. Flowers small, greenish-white.

2. **S. Thaliana,** Gaud. Stem slender, branching, hairy at the base; leaves hairy, toothed or entire, the lowest obovate or oblanceolate, tufted, the others small and scattered; siliques linear, erect-spreading, twice as long as the pedicels. — Rocks and sterile soil, Georgia and northward. Introduced. March and April. ② — Stem 4′ – 8′ high. Flowers white.

3. **S. officinale,** Scop. Stem tall (2° – 3°), branching, and with the runcinate leaves pubescent; silique subulate, nearly sessile, appressed to the rachis. — Waste grounds in the upper districts, and northward. Introduced. May – Sept. ① — Flowers pale yellow.

8. WAREA, Nutt.

Silique linear, flattened, long-stalked, recurved; the valves 1-nerved. Seeds in a single row in each cell. Cotyledons oblong, flat, incumbent. — Smooth and erect branching annuals. Leaves entire. Flowers showy, in corymb-like racemes. Petals long-clawed, white or purple.

1. **W. amplexifolia,** Nutt. Leaves oval and slightly clasping; petals oval, bright-purple; silique linear. — Sand hills, Florida. September. — Stem 1° – 2° high.

2. **W. cuneifolia,** Nutt. Leaves wedge-lanceolate; petals obovate, white or rarely purple; silique narrow-linear. — Sand hills, Florida and Georgia. September. — Stem 1° – 2° high.

9. DRABA, L.

Silicle oblong or oval, flattened parallel with the broad partition. Seeds numerous in two rows in each cell, compressed, wingless. Cotyledons accumbent. — Small herbs with entire or toothed leaves, and yellow or white flowers in terminal racemes.

§ 1. DRABA. — *Petals entire.*

1. **D. brachycarpa,** Nutt. Annual; minutely downy; stems leafy, simple or branched; radical leaves round-ovate, stalked, those of the stem oblong-linear; silicle oval, as long as the pedicel. — Middle districts of Georgia, in dry soil, and westward. March and April. — Stem 2′–6′ high. Silicle 2″–3″ long. Flowers white.

2. **D. Caroliniana,** Walt. Annual; stems leafy and hispid at the base, smooth above; leaves tufted, spatulate-obovate, hispid; silicle linear-oblong, two or three times as long as the pedicel. — Sandy fields, Georgia and northward. February–April. — Stems 1′–3′ high. Silicle 4″–6″ long. Flowers white.

3. **D. cuneifolia,** Nutt. Annual; leaves obovate, wedge-shaped, or the lowest spatulate, toothed; raceme somewhat elongated in fruit (1′–3′), at length equalling the naked peduncle; petals emarginate, much longer than the calyx; silicles oblong-linear, minutely hairy, longer than the horizontal pedicels. — West Florida (*Nuttall*) and westward. March and April.

4. **D. ramosissima,** Desv. Perennial; stems diffuse, pubescent; leaves linear-lanceolate or the lowest oblanceolate and crowded, coarsely toothed; racemes corymbose-branched; silicle lanceolate, flat, twisted, hairy; style slender. — Mountains of North Carolina and northward. April and May. — Stems 4′–8′ long. Flowers white.

§ 2. EROPHILA. — *Petals 2-cleft.*

5. **D. verna,** L. Stems naked, slender (2′–4′ high); leaves radical, oblong; silicles oblong, smooth, shorter than the pedicels, scattered; flowers small, white. — Waste places, chiefly in the upper districts. Introduced. ①.

10. VESICARIA, Lam.

Silicle globular and inflated, or more or less flattened parallel to the orbicular partition; the hemispherical or convex thin valves nerveless. Seeds few or several, flat. Cotyledons accumbent. Filaments toothless. — Low herbs, pubescent or hoary with stellate hairs. Flowers mostly yellow.

1. **V. Lescurii,** Gray. Somewhat pubescent, but green; stems diffusely ascending from a biennial root; leaves oblong or oval, sparingly toothed, those of the stem half-clasping by a sagittate base; racemes elongated, many-flowered; pedicels ascending; filaments inflated at the base; style half the length of the hispid orbicular or broadly oval flattened silicle; seeds wing-margined, one to four in each cell. — Hills near Nashville, Tennessee. April and May. — Flowers golden yellow.

11. CAMELINA, Crantz.

Silicle ovoid or pear-shaped, flattened parallel to the broad partition; valves 1-nerved. Seeds numerous, oblong. Cotyledons incumbent. Style slender. — Flowers small, yellow.

1. **C. sativa,** Crantz. Leaves alternate, sagittate; silicle large. — Fields, North Carolina, and northward. Introduced. ①.

12. SENEBIERA, Poir.

Silicle didymous, compressed contrary to the narrow partition; the cells globular, 1-seeded, crested or pitted, indehiscent, at maturity separating from the partition. Cotyledons incumbent. — Annual or biennial diffuse strong-scented herbs, with pinnately lobed or divided leaves, and minute white flowers, in short racemes, opposite the leaves. Stamens 2, 4, or 6.

1. **S. pinnatifida,** DC. Stem prostrate; leaves deeply pinnatifid, with the numerous lobes toothed on the upper edge; silicle pitted, emarginate at both ends. — Waste places, Florida to North Carolina. March – May. — Racemes many-flowered.

2. **S. Coronopus,** Poir. Stem prostrate; leaves deeply pinnatifid, with the lobes entire, toothed, or pinnatifid; silicles not emarginate, the margins crested. — Waste places. Introduced. March and April.

13. LEPIDIUM, L. Peppergrass.

Silicle rounded or obcordate, compressed contrary to the narrow partition; valves carinate: cells 1-seeded. Cotyledons accumbent and incumbent. Petals sometimes wanting. Stamens 2, 4, or 6. — Leaves entire, toothed, or pinnately divided. Flowers minute, in terminal racemes.

1. **L. Virginicum,** L. Smooth; stem erect, much branched; leaves lanceolate, sharply toothed, the lowest tapering and mostly pinnatifid toward the base; silicle orbicular, wingless; cotyledons accumbent; stamens mostly two. — Waste places, very common. March – June. ① — Stem 1° – 2° high.

14. CAPSELLA, Vent. Shepherd's Purse.

Silicle triangular-wedge-shaped, flattened contrary to the narrow partition, many-seeded; valves wingless. Cotyledons incumbent. — An annual herb, with the radical leaves clustered and pinnatifid; those of the stem clasping and often entire. Racemes elongated. Silicle shorter than the spreading pedicel. Flowers white.

1. **C. Bursa-pastoris,** Mœnch. — Waste ground, Florida and northward. March and April. Introduced.

15. CAKILE, Tourn.

Silicle 2-jointed; the joints thick, 1-celled, 1-seeded. Seed of the upper joint erect, of the lower suspended. Cotyledons accumbent. — Fleshy sea-side annuals, with pinnatifid or lobed leaves, and white or purple flowers in racemes opposite the leaves.

1. **C. maritima,** Scop., var. **æqualis.** Smooth; stem much branched, prostrate; leaves oblong, irregularly toothed or pinnatifid, narrowed into a petiole as long as the limb; flowering racemes short and corymb-like, fruiting ones elongated; petals wedge-obovate, emarginate; mature silicle linear, 8-ribbed, the upper joint ovate-lanceolate, slightly compressed, beak-pointed, one third longer than the cylindrical lower one; cotyledons linear, 3-angled. (C. æqualis, *L'Her.*) — Drifting sands along the coast. May – August. — Stems 1° – 2° long. Flowers pale purple.

Order 13. CAPPARIDACEÆ. (Caper Family.)

Herbs, shrubs, or trees, with acrid watery juice, alternate, simple or palmately-compound leaves, and regular hypogynous flowers. Stipules spiny or wanting. — Sepals 4, imbricated or valvate in the bud. Petals 4, mostly clawed. Stamens 6 or numerous. Ovary 1-celled: ovules amphitropous or campylotropous, attached to the two parietal placentæ. Fruit silique-like, and 2-valved or indehiscent. Seeds reniform, without albumen. Embryo curved.

Synopsis.

* Calyx 4-sepalous. — Herbs.

1. POLANISIA. Stamens 8 - 32, free. Torus short. Style filiform.
2. CLEOME. Stamens 6, free. Torus short. Stigma sessile.
3. GYNANDROPSIS. Stamens 6. Filaments partly united with the stipe of the ovary.

* * Calyx 4-parted. — Shrubs.

4. CAPPARIS. Stamens numerous, free. Leaves entire.

1. POLANISIA, Raf.

Petals clawed. Stamens 8 – 32: filaments free, unequal, filiform. Torus short, bearing a truncated or emarginate gland on the upper side. Ovary sessile or short-stipitate. Style filiform. Capsule silique-like, many-seeded. — Annual clammy herbs, with palmately trifoliolate petioled leaves, and racemose flowers.

1. **P. tenuifolia,** Torr. & Gray. Stem slender, erect, branching; leaflets filiform, longer than the petiole; petals oval, entire, short-clawed, unequal; stamens 12 – 15; capsule linear, smooth, short-stipitate, pointed with the persistent style; seeds minute, circular. — Georgia (*Le Conte*) and South Florida (*Blodgett*). — Stem 1° – 2° high. Flowers white.

2. CLEOME, L.

Petals long-clawed, nearly equal, entire. Stamens 6. Filaments filiform, elongated, 1 – 3 often shorter, rarely all abbreviated. Torus short, hemispherical. Stigma sessile. Capsule silique-like, stipitate or almost sessile, many-seeded. — Herbs with palmately 3 – 7-foliolate leaves, and bracted racemose flowers. Stipules, when present, spiny.

1. **C. pungens,** Willd. Clammy-pubescent; leaves 5 - 7-foliate, long-petioled; leaflets lanceolate, acute, serrulate; lower bracts trifoliolate, the upper ones simple, cordate-ovate; stipules spiny; capsule smooth, shorter than the elongated stipe; seeds rugose. — Waste places, Florida and westward. May – August. Introduced. ① — Stem 2° – 4° high. Petioles more or less spiny. Flowers showy, purple, changing to white.

3. GYNANDROPSIS, DC.

Petals clawed, imbricated or open in the bud. Stamens 6; the filaments adnate to the lower half of the elongated stipe of the ovary. Stigma sessile. Capsule silique-like, many-seeded. — Herbs with palmately 3 – 5-foliolate leaves, and racemose bracted flowers.

1. **G. pentaphylla,** DC. Clammy-pubescent; leaves 5-foliate, the lower ones and bracts 3-foliolate; leaflets oblong-obovate, nearly entire; flowers white, open in the bud; capsules hispid; seeds warty. — Waste places, Florida to North Carolina. Naturalized. May – August. ① — Stem 2° – 3° high.

4. CAPPARIS, L. Caper-tree.

Sepals partly united, imbricated or valvate in the bud, often glandular at the base. Petals imbricated in the bud. Stamens numerous. Torus small. Ovary long-stipitate. Stigma sessile. Fruit fleshy, globose or silique-like, many-seeded. — Shrubs or trees, with simple entire coriaceous leaves, spiny or adnate stipules, and mostly showy flowers.

1. **C. Jamaicensis,** Jacq. Leaves oblong, emarginate, smooth above, the lower surface, like the flowers and flattened branches, dotted and covered with minute scales; flowers terminal, by pairs, on short 4-angled peduncles; sepals ovate, valvate in the bud, scarcely shorter than the oval white petals; filaments 20 – 24, long, villous at the base; capsule long (6′ – 8′), cylindrical, torulose, downy, long-stipitate. (Colicodendron anceps, *Shuttl.*) — South Florida. — Shrub 8° – 10° high.

2. **C. cynophallophora,** L. Leaves oblong, obtuse, reticulate-veined, glabrous like the flowers and branches; peduncles 4-angled, few-flowered; sepals rounded, imbricated in the bud, much shorter than the obovate white petals; filaments very long (2′), smooth; capsule (6′ – 8′ long) smooth, torulose, short-stipitate, pulpy within. — South Florida. — Shrub 6° – 8° high.

Order 14. VIOLACEÆ. (Violet Family.)

Herbs or shrubs. Leaves alternate, simple, involute in the bud. Stipules persistent. Flowers irregular, axillary, on bracted peduncles, nodding. Sepals 5, persistent, imbricated in the bud. Petals 5, hypogynous, obliquely convolute in the bud. Stamens 5, alternate with the petals, connivent. Anthers adnate, introrse. Style single. Capsule 1-celled, loculicidally 3-valved, many-seeded: valves each bearing a placenta in the middle. Embryo straight, in fleshy albumen.

1. VIOLA, Tourn. Violet. Heart's-ease.

Sepals nearly equal, produced at the base into a free appendage. Petals unequal, the lower one produced into a sac or spur at the base. Stamens short; the broad filaments membranaceous and prolonged above the anthers; the two anterior ones spurred on the back. Stigma often beaked. — Low herbs. Peduncles 1-flowered.

§ 1. *Leaves and peduncles arising from a subterranean rhizoma, without apparent stems: perennials, flowering in early spring, the later flowers apetalous.*

* *Flowers blue or purple.*

1. **V. cucullata,** Ait. Smooth or pubescent; leaves long-petioled, all undivided, varying from cordate-ovate to reniform, serrate, the sides at the base involute when young; the later ones acutish; lateral petals bearded; stigma beakless. — Low ground, common. — Flowers blue, often variegated with white.

2. **V. palmata,** L. Downy or hairy, rarely smooth; earliest leaves entire, cordate or reniform; later ones variously 3–9-lobed, the central lobe always largest, lanceolate or oblong, the lateral ones spreading; flowers large, with the lateral and lower petals bearded. — Dry soil, common. — Flowers purple or blue.

3. **V. villosa,** Walt. Downy; leaves prostrate, short-petioled, orbicular or broadly cordate, crenate, purple-veined; peduncles mostly shorter than the leaves, flowers small. — Dry sandy or gravelly soil, Florida to North Carolina. — Flowers pale blue.

4. **V. sagittata,** Ait. Smoothish; leaves cordate-oblong, acute, toothed and somewhat sagittate at the base, the earliest ones rounded, short-petioled; lateral petals bearded. — Damp pastures in the upper districts and northward. — Flowers larger than in the last, deep blue.

5. **V. pedata,** L. Smoothish; leaves all 7–9-parted, the divisions linear-lanceolate, entire or toothed, narrowed downward; petals beardless. — Dry sandy soil in the middle and upper districts, and northward. — Flowers large, deep blue or purple.

* * *Flowers white.*

6. **V. primulæfolia,** L. Smooth or hairy; leaves oblong, mostly acute, crenate, cordate or abruptly decurrent on the winged petiole; petals often acute, the lower ones bearded and striped with purple. — Low grounds, common. — Rhizoma slender, and commonly bearing long leafy runners. Flowers small.

7. **V. lanceolata,** L. Smooth or pubescent; leaves lanceolate or linear, narrowed into the long and winged petioles; flowers beardless. — Low pine barrens. Florida and northward. — Rhizoma like the last.

8. **V. blanda,** Willd. Minutely pubescent; rhizoma slender; leaves small, orbicular-cordate, crenate, shorter than the peduncles; flowers small, beardless, sweet-scented, the lower petal striped with purple. — Low ground and meadows, North Carolina and northward. — Petioles slender, wingless. Leaves rarely acute.

* * * *Flowers yellow.*

9. **V. rotundifolia,** Michx. Nearly smooth; leaves broadly cordate, longer than the short petioles; lateral petals bearded. — Mountains of North Carolina and northward. — Rhizoma slender, bearing runners. Leaves flat on the ground. Petals striped with purple.

§ 2. *Leaves and flowers borne on manifest stems: perennials.*

* *Stems leafy throughout.*

10. **V. Muhlenbergii,** Torr. Primary stems erect, the later ones prostrate; leaves broadly cordate or reniform, crenate and roughened with minute elevated points, the uppermost acute; stipules fringed; spur obtuse, half as long as the pale purple petals; lateral petals bearded. — Damp shades in the upper districts and northward.

Var. **multicaulis,** Torr. & Gray. Stems all prostrate and creeping; leaves smaller, roundish, obscurely crenate, purple-veined. — Dry rocks and hills in the lower districts. March and April. — Stems slender, 4′ – 6′ long.

11. **V. stricta,** Ait. Stems ascending; leaves cordate, serrate, roughened as in No. 10, the uppermost often acute; stipules large, fringed; spur thick, shorter than the large cream-colored petals; lateral petals bearded, the lower striped with purple. — Mountains of Georgia and northward. April. — Stems 10′ – 12′ high. Peduncles elongated.

12. **V. Canadensis,** L. Tall; leaves large, broadly cordate, acuminate, coarsely serrate, longer than the peduncles; stipules nearly entire; spur very short; petals white, externally purplish, the lateral ones bearded. — Rich soil along the mountains of North Carolina and northward. May – August. — Stems 1° – 2° high.

* * *Stems leafy at the summit: stipules entire.*

13. **V. hastata,** Michx. Smooth or hairy; leaves rhombic-ovate, hastate – 3-lobed, or the lower ones 3-parted (V. tripartita, *Ell.*), serrate and commonly acute; flowers small, yellow; lateral petals bearded, the lowest striped with purple; spur very short. — Shaded hill-sides, Florida and northward. April and May. — Stem 6′ – 12′ high. Stipules small.

14. **V. pubescens,** Ait. Downy or woolly; leaves broadly cordate, coarsely serrate, mostly acute; stipules large; spur very short; flowers yellow, the lower petals veined with purple, bearded. — Dry rocky soil in the upper districts, and northward. April. — Stems 6′ – 12′ high. Capsules sometimes villous.

§ 3. *Stems leafy: root annual.*

15. **V. tricolor,** L., var. **arvensis,** DC. Stems branching; lowest leaves roundish, the upper lanceolate, entire; stipules leafy, pinnatifid; flowers small, yellow and purple. — Cultivated ground. Introduced. — Stem 6′ high.

2. SOLEA, Ging.

Sepals not produced at the base. Petals unequal, the lowest one gibbous at the base and 2-lobed at the apex, the others smaller. Stamens with the filaments united and produced above the anthers, the two lower ones glandular at the

base. Style hooked at the summit. — An upright simple hairy perennial herb, with numerous ovate-lanceolate, acuminate and entire leaves, and 1 – 3 short-stalked greenish nodding flowers in each axil.

1. **S. concolor,** Ging. — Mountains of Carolina and northward, in deep shades. June and July. (Viola concolor, *Pursh.*) — Stem 1° – 2° high. Leaves short-petioled.

ORDER 15. CISTACEÆ. (ROCK-ROSE FAMILY.)

Herbs or low shrubs, with entire leaves, and regular mostly polyandrous flowers. — Sepals 5, persistent, the two outer ones smaller, the three inner twisted in the bud. Petals mostly 5, twisted contrary to the sepals in the bud, rarely wanting. Stamens few or numerous, distinct, hypogynous. Anthers innate. Ovary 1-celled. Style single. Capsules 3 – 5-valved, bearing as many parietal placentæ each in the middle of the valve, few or many-seeded. Seeds orthotropous. Embryo curved, in mealy albumen.

Synopsis.

1. HELIANTHEMUM. Style none. Stigma capitate. Embryo nearly annular.
2. LECHEA. Style none. Stigmas plumose. Embryo nearly straight.
3. HUDSONIA. Style filiform Stigma minute. Embryo coiled.

1. HELIANTHEMUM, Tourn. ROCK-ROSE.

Petals 5, corrugated in the bud, sometimes wanting. Stigma sessile or nearly so, capitate, 3-lobed. Capsule 3-valved. Embryo curved nearly into a ring. — Low herbs or partly shrubby plants, with fugacious yellow flowers.

* *Flowers perfect: petals conspicuous: stamens indefinite: capsule many-seeded.*

1. **H. Carolinianum,** Michx. Hirsute; leaves lanceolate, denticulate, acute, short-petioled, the lowest obovate, crowded; flowers large, solitary, borne above the axils. — Dry sandy soil, Florida to North Carolina and westward. March and April. — Stems 6′ – 12′ high, ascending from a shrubby base. Flowers 1′ wide.

2. **H. arenicola,** sp. n. Hoary; leaves small, lanceolate, obtuse, entire, with the sides revolute; flowers solitary, or 2 – 4 in terminal umbellate clusters, on slender pedicels. — Drifting sands near the coast, West Florida. March and April. — Stems shrubby and branched at the base, all but the short (2′ – 6′) flowering stems buried in the sand. Flowers $\frac{1}{2}$′ wide.

* * *Flowers of two kinds: the earliest as in the last section, the later ones smaller, clustered, with small petals, or none, fewer stamens, and few-seeded capsules.*

3. **A. corymbosum,** Michx. Tomentose, stems erect, shrubby at the base; leaves lanceolate, obtuse, entire, hoary beneath, with the sides revolute; flowers nearly sessile in a cymose cluster at the summit of the stem, the perfect ones long-peduncled; sepals woolly. — Dry sands near the coast, Florida to North Carolina. April. — Stems 1° high. Capsule smooth.

4. **H. Canadense,** Michx. Stems erect, at first nearly simple, downy or smooth; leaves lanceolate, downy, or nearly smooth above; flowers axillary, the perfect ones large, solitary, the later apetalous ones clustered or sometimes wanting. (H. rosmarinifolium, *Ph.* ? H. ramuliflorum, *Michx.*) — Dry sterile soil, Florida and northward. April. — Stems 1° high. Perfect flowers an inch wide.

2. LECHEA, L.

Petals 3, persistent, not longer than the sepals. Stamens 3 - 12. Stigmas 3, sessile, plumose. Capsule globose, 3-valved, incompletely 3-celled, 6-seeded. Embryo slightly curved. — Perennial herbs, with small greenish flowers in racemes or panicles.

1. **L. major,** Michx. Villous; leaves alternate, opposite, or whorled, elliptical, those on the prostrate radical branches roundish; flowers on short pedicels, densely crowded in short simple or compound axillary racemes. (L. villosa, *Ell.*) — Dry sterile soil, Florida and northward. July and August. — Stem 2° high, branching toward the summit. Capsules as large as a pin's head.

2. **L. minor,** Lam. Rough with appressed scattered hairs; the young branches and calyx more or less hoary; stems paniculately branched above; leaves scattered, linear; flowers loosely racemose, on distinct, often appressed pedicels. (L. racemulosa and L. tenuifolia, *Michx.*) — Dry sandy soil, common. July and August. — Stems ½° - 2° high. Capsules larger than in No. 1. Radical branches often wanting.

3. HUDSONIA, L.

Petals 5, larger than the sepals, fugacious. Stamens 9 - 30. Style filiform. Stigma minute. Capsule oblong, 1-celled, 3-valved, with 2 - 6 erect seeds attached near their base. Embryo coiled. — Low tufted shrubs, with minute hoary, subulate, imbricated leaves, and yellow flowers at the summit of the branches.

1. **H. montana,** Nutt. Stems 2′ - 4′ high; leaves loosely imbricated; pedicels longer than the flowers; calyx campanulate; sepals acuminate. — Table Rock, North Carolina.

ORDER 16. DROSERACEÆ. (SUNDEW FAMILY.)

Low glandular-hairy marsh herbs, with circinate tufted radical leaves, and regular hypogynous white or purplish flowers, borne on a naked scape. Sepals 5, persistent. Petals 5, withering. Stamens 5 - 15, distinct: anthers extrorse. Ovary 1-celled, many-ovuled, with 3 or 5 parietal placentæ. Styles separate or united. Capsule loculicidally 3 - 5-valved. Seeds anatropous. Embryo minute at the base of fleshy albumen.

1. DROSERA, L. SUNDEW.

Stamens 5. Styles 3 - 5, deeply 2-parted; the divisions 2 - many-lobed. Capsule 3-valved, many-seeded. — Leaves dewy with glandular hairs. Scape often forking. Flowers racemose, secund.

1. **D. filiformis,** Raf. Rhizoma thick, creeping; leaves erect, filiform, elongated, smooth at the base; scape smooth, many-flowered; flowers large, bright purple; calyx hairy; seeds oblong, dotted. — Low pine barrens, Florida and northward. April. ¼ — Scapes 1° – 1½° high. Flowers 1′ or more wide.

2. **D. longifolia,** L. Rhizoma long and slender; leaves linear-spatulate, gradually narrowed into the long and smooth petiole, the upper ones erect; scape smooth, declined at the base, 8 – 12-flowered; calyx obovate; seeds oblong. (D. foliosa, *Ell.*) — Sandy swamps, oftener in water, Florida and northward. May and June. ¼ — Scapes 4′ – 6′ high. Flowers small, white.

3. **D. capillaris,** Poir. Rhizoma short or none; leaves spatulate, narrowed into the long and smoothish petiole; scape slender, smooth, erect, 9 – 20-flowered; calyx obovate; seeds oval, finely furrowed and granular. (D. brevifolia, var. major, *Hook.*) — Boggy ponds, Apalachicola, Florida, to South Carolina (*Bosc.*). April and May. ② or ¼ — Scape 6′ – 15′ high. Leaves 2′ – 3′ long. Flowers pale rose-color.

4. **D. rotundifolia,** L. Rhizoma none; leaves orbicular, abruptly contracted into the hairy petiole; scape erect, smooth, 6 – 10-flowered; calyx ovoid; seeds covered with a loose membranaceous coat. — Mossy swamps, Florida and northward. May and June. ① — Scapes 6′ – 9′ high. Leaves 2′ long. Flowers white.

5. **D. brevifolia,** Pursh. Glandular-pubescent throughout; rhizoma none; leaves short, wedge-shaped; scape erect, 3 – 6-flowered; calyx oval; seeds ovoid, minutely glandular. — Low sandy pine barrens, Florida to North Carolina. April. ① — Scapes 3′ – 6′ high. Leaves ½′ long. Flowers ½′ wide, white.

2. DIONÆA, Ellis. Fly-trap.

Stamens 10 – 15. Styles united. Stigmas 5, fimbriate. Capsule 1-celled, opening irregularly. Placenta at the base of the cell, many-seeded. — A smooth perennial herb, with the habit of Drosera. Leaves spreading, on broadly-winged, spatulate petioles, with the limb orbicular, notched at both ends, and fringed on the margins with strong bristles; sensitive! Flowers in a terminal umbel-like cyme, white, bracted.

1. **D. muscipula,** Ellis. — Sandy bogs in the pine barrens of North Carolina and the adjacent parts of South Carolina. April and May. — Scape 1° high, 8 – 10-flowered. Flowers 1′ wide. — For an interesting account of this remarkable plant, see Curtis's Plants of Wilmington, in the Boston Journal of Natural History, Vol. I. 1834.

Order 17. PARNASSIACEÆ. (Parnassia Family.)

Perennial smooth herbs, with ovate or reniform chiefly radical and entire leaves, on long petioles, and large solitary flowers terminating the scape-like, 1-leaved stem. — Sepals 5, persistent. Petals 5, ovate or obo-

vate, veiny, imbricated in the bud, deciduous. Fertile stamens 5, alternating with the petals: anthers introrse. Sterile ones in sets of 3 – 15 more or less united filaments, placed opposite each petal. Ovary 1-celled, with 3 – 4 parietal placentæ. Stigmas 3 – 4, sessile, placed over the placentæ. Capsule loculicidally 3 – 4-valved at the apex, many-seeded. Seeds anatropous, winged, without albumen. Embryo straight, cylindrical.

1. PARNASSIA, Tourn. GRASS OF PARNASSUS.

Characters same as the order.

1. **P. Caroliniana,** Michx. Leaves broadly ovate or cordate-ovate; cauline one near the base of the stem, clasping; petals oval, sessile, with impressed greenish veins; sterile stamens by threes, distinct almost to the base, 2 – 3 times as long as the recurved fertile ones. — Damp soil, Florida and northward. October and November. — Stem 12′ – 18′ high. Flowers 1′ wide.

2. **P. asarifolia,** Vent. Leaves reniform; cauline one near the middle of the stem, clasping; petals broadly ovate, short-clawed; sterile stamens by threes. — High mountains of North Carolina. August and September. — Flowers larger than in No. 1.

ORDER 18. HYPERICACEÆ. (ST. JOHN'S-WORT FAMILY.)

Herbs or shrubs, with opposite entire dotted leaves, without stipules, and regular hypogynous, mostly yellow flowers. — Sepals 4 – 5, imbricated in the bud, persistent. Petals 4 – 5, convolute or imbricated in the bud, deciduous. Stamens mostly numerous, and often united at the base into 3 – 5 sets: anthers introrse. Styles 2 – 5, often united, persistent. Capsule 1-celled, with strictly parietal placentæ, or 2 – 5-celled by the meeting of the placentæ at the axis, septicidally 2 – 5-valved. Seeds very numerous, minute, anatropous, without albumen.

Synopsis.

* Petals convolute in the bud.

1. ASCYRUM. Sepals and (yellow) petals 4.
2. HYPERICUM. Sepals and (yellow) petals 5. Stamens without interposed glands.

* * Petals imbricated in the bud.

3. ELODEA. Sepals and (rose-colored) petals 5. A gland between the sets of stamens.

1. ASCYRUM, L. ST. PETER'S-WORT.

Sepals 4, the two outer ones much larger (except No. 5). Petals 4, convolute in the bud, oblique. Stamens numerous. Styles 2 – 4, distinct or united. Capsules 2 – 4-valved, 1-celled, with 2 – 4 parietal placentæ. — Smooth shrubs with 2-edged branches. Flowers mostly solitary, yellow.

* *Pedicels* 2*-bracted: styles shorter than the ovary.*

1. **A. Crux-Andreæ,** L. Leaves linear-oblong, obtuse, narrowed at the base; outer sepals oval, rather obtuse, the inner ones minute; petals oblong,

often acute, approximate in pairs; styles 2; capsule as long as the sepals. — Sterile soil, Florida and northward. June – September. — Shrub 1° – 3° high. Leaves 1′ long. Branches opposite.

2. **A. stans,** Michx. Leaves oval-oblong, obtuse, closely sessile; outer sepals orbicular-cordate, obtuse; the inner ones lanceolate, acute; petals obovate; styles 3 or 4; capsule shorter than the sepals. — Var. OBOVATUM, *Torr. & Gray*, is a dwarf state, with obovate leaves, and obtuse inner sepals. — Damp soil, Florida and northward. July – September. — Shrub 2° – 3° high. Leaves and flowers larger than in No. 1.

** * Pedicels bractless: styles longer than the ovary.*

3. **A. amplexicaule,** Michx. Leaves and outer sepals cordate-ovate, clasping; inner sepals lanceolate, as long as the outer ones; petals obovate; styles 3; capsule ovoid, barely half as long as the sepals. — Damp soil near the coast, Florida, Georgia, and westward. April – September. — Shrub 2° – 3° high. Branches many times forking.

4. **A. pumilum,** Michx. Dwarf; leaves oblong-obovate, obtuse; outer sepals round-ovate, the inner ones minute; petals obovate; pedicels long and slender, reflexed in fruit; styles 2, united. — Dry gravelly soil, Florida, Georgia, and westward. March and April. — Stems 3′ – 6′ long, diffuse. Leaves 4″ – 6″ long.

5. **A. microsepalum,** Torr. & Gray. Leaves very numerous, small, oblong-linear, narrowed at the base, obtuse; flowers somewhat corymbose; sepals small and equal. — Flat pine barrens, Florida and Alabama. March and April. — Shrub bushy, 1° – 2° high. Leaves 6″ – 9″ long. Flowers 1′ wide.

2. HYPERICUM, L. ST. JOHN'S-WORT.

Sepals 5, similar. Petals 5, oblique, convolute in the bud. Stamens mostly numerous, and commonly collected in 3 – 5 sets, without intervening glands. Styles 3 – 5, distinct or united. Capsule 1 – 5-celled. — Herbs or shrubs. Flowers mostly cymose, yellow.

§ 1. *Stamens numerous.*

** Capsule 3-celled: styles united: shrubs.*

1. **H. prolificum,** L. Branches 2-edged, the barren ones elongated; leaves lance-oblong, obtuse or mucronate, narrowed at the base; cymes axillary and terminal, often few-flowered; capsule oblong, rarely 4 – 5-celled. — Varies with a more branching stem, smaller and narrower leaves, and smaller and more numerous flowers. (H. galioides, *Ph.*) — Swamps and banks of rivers in the middle and upper districts. July and August. — Shrub 2° – 3° high. Leaves 1′ – 2′ long, paler beneath.

2. **H. Buckleyi,** M. A. Curtis. Low, widely branching from the base; leaves oblong, obtuse, narrowed at the base, paler beneath; flowers solitary, terminal, on rather long and bracted pedicels; sepals obovate; style and stamens long and slender. — Mountains of Georgia and North Carolina. — Shrub 8′ – 12′ high. Flowers 1′ wide.

* * *Capsule 3-celled: styles separate: petals black-dotted: herbs.*

3. **H. perforatum,** L. Stem much branched, slightly 2-edged; cymes corymbose, many-flowered; leaves elliptical or linear-oblong, obtuse, with pellucid dots; sepals lanceolate, acute. — Old fields, sparingly naturalized. June–August. — Stem 1°–2° high, bearing runners at the base. Flowers 1′ wide, deep yellow.

4. **H. maculatum,** Walt. Stem terete, sparingly branched above; leaves oblong-cordate, obtuse, clasping, marked with pellucid dots; cymes many-flowered, corymbose; sepals lanceolate, acute; styles twice as long as the ovary. — Dry pine barrens, Florida to North Carolina. June–August. — Stem 2°–3° high. Leaves 1′–1½′ long, rigid. Flowers small.

5. **H. corymbosum,** Muhl. Leaves thin, oblong, slightly clasping; sepals ovate; styles as long as the ovary; otherwise nearly as the last. — Mountains of North Carolina, northward and westward. July. — Stem 1°–2° high. Leaves 1′–2′ long.

* * * *Capsule 1-celled, or partially 3-celled by the introversion of the placentæ.*

+– *Shrubs: leaves evergreen.*

++ *Cymes leafy.*

6. **H. fasciculatum,** Lam. Lowest leaves obovate, the others narrow-linear, with revolute margins, and numerous smaller ones clustered in the axils; cymes mostly 3-flowered, lateral and terminal; sepals like the leaves, mostly shorter than the obovate one-angled petals. — Var. ASPALATHOIDES has very short (2″–3″) and wider leaves and sepals, the latter one third as long as the smaller petals. — Margins of pine barren ponds, Florida to North Carolina and westward. July and August. — Shrub 2°–6° high. Leaves 6″–12″ long, conspicuously dotted, glossy. Capsule oblong-linear.

7. **H. galioides,** Lam. Leaves linear-oblanceolate, obtuse, tapering to the base, glossy above, rigid; those in the axils clustered; cymes lateral and terminal, few-flowered, or the terminal ones compound; sepals equal, linear, acute, shorter than the petals; capsules acute. — Pine barrens, Florida to South Carolina and westward.

Var. **ambiguum.** (H. ambiguum, *Ell.? Torr. & Gray.*) Leaves oblanceolate, mucronate, pale and thin; sepals unequal, lanceolate, narrowed at the base, longer than the petals. — River swamps, Florida. July and August. — Stems 2°–4° high. Branches often elongated. Leaves 1′–1½′ long.

8. **H. myrtifolium,** Lam. Leaves cordate-oblong and partly clasping, mostly obtuse, glaucous; cymes few-flowered, terminal; sepals leaf-like, ovate, acute, as long as the obovate petals; stamens very numerous; capsule conical-ovate. (H. glaucum, *Michx.*) — Pine barren ponds, Florida to South Carolina and westward. May–September. — Shrub 1°–2° high, with spreading terete branches. Leaves thick, 1′ long. Flowers 1′ wide.

9. **H. aureum,** Bartram. Leaves oblong, mucronate, narrowed at the base, wavy on the margins, glaucous beneath; flowers very large, mostly solitary at the summit of the 2-edged branches; sepals leaf-like, shorter than the thick and tardily deciduous petals; stamens very numerous; capsule ovate, much smaller

than the calyx. (H. amœnum, *Pursh.*) — Banks of the Flint River, Georgia to Tennessee, and westward. June – August. — Stem 2° high, diffusely branched. Leaves 2′ – 3′ long. Flowers 2′ wide, with recurved orange-colored petals.

Cymes leafless, bracted.

10. **H. nudiflorum,** Michx. Branches 4-angled ; leaves oblong, obtuse, narrowed at the base, paler beneath ; cymes terminal, peduncled, 5 – 15-flowered ; bracts subulate ; buds globose ; petals oval, twice as long as the oval sepals ; capsule ovate, longer than the calyx. — Low grounds, Florida and northward. July and August. — Shrub 2° – 3° high. Leaves thin, 1′ – 2′ long. Flowers ½′ wide. Petals recurved.

11. **H. cistifolium,** Lam. Branches 2-edged ; leaves rigid, linear-oblong, sessile ; cymes terminal, compound, many-flowered ; bracts subulate ; buds ovate ; petals spreading, obovate, twice as long as the oblong, unequal sepals ; capsule 3-lobed, ovate, longer than the sepals. (H. rosmarinifolium, *Ell.*) — Pine barren swamps, near the coast, Florida to South Carolina and westward. July – September. — Shrub 2° – 3° high. Leaves very numerous, 1′ long. Flowers ½′ wide. Valves of the capsule strongly impressed on the back.

12. **H. fastigiatum,** Ell. "Branches somewhat compressed ; leaves narrow-lanceolate, very acute ; corymbs terminal, many-flowered, fastigiate ; styles united. — Pine barrens of Scriven County, Georgia. May – July. — Shrub 3° high. Leaves 3′ long, narrowed but connate at the base. Flowers very numerous." *Elliott.* (*)

Herbs : styles distinct.

13. **H. graveolens,** Buckl. Stem smooth, terete, nearly simple ; leaves oblong-ovate, obtuse, clasping ; cymes lateral and terminal, many-flowered ; petals oblong-obovate, much longer than the lanceolate acute sepals ; stamens collected in three sets, as long the petals ; styles slender, twice as long as the ovary. — Mountains of North Carolina. July and August. — Stem 2° – 3° high. Leaves 2′ long. Flowers large.

14. **H. pilosum,** Walt. Downy ; stem terete, mostly simple, slender ; leaves small, lance-ovate, acute, erect, sessile ; cymes compound ; styles short. (H. simplex, *Mich.*) — Wet pine barrens, Florida to North Carolina and westward. July and August. ① ? — Stems 1° – 2° high. Leaves ½′ long. Flowers 5″ – 6″ wide.

15. **H. angulosum,** Michx. Smooth ; stem 4-angled, branching ; leaves ovate-lanceolate, acute, sessile ; cymes leafy, many-flowered, the branches often simple ; sepals ovate, shorter than the petals, longer than the ovate capsule. — Varies (H. acutifolium, *Ell.*) with larger shining leaves, compound and nearly leafless cymes, and more crowded flowers. — Pine barren ponds (the var. in dry soil), Florida to North Carolina and westward. June – August. — Stem 2° – 3° high. Leaves 6″ – 12″ long. Flowers small. Styles longer than the capsule.

§ 2. *Stamens* 5 – 20 : *capsule strictly* 1*-celled : styles separate : annuals.*

* *Flowers in cymes.*

16. **H. mutilum,** L. Stems slender, branching above, 4-angled, leaves oblong or roundish, obtuse, clasping, 5-nerved ; cymes leafy at the base ; sepals

lanceolate, mostly longer than the small petals, and equalling the (green) ovoid capsule; stamens 6 – 12. (H. parviflorum, *Muhl.* H. quinquenervium, *Walt.*) — Ditches and low grounds, common. June – August. — Stem 1° high. Branches of the cyme filiform. Flowers very small, remote.

17. **H. Canadense,** L. Stems simple or branched, 4-angled; leaves linear or linear-lanceolate, the upper ones acute, sessile; sepals lanceolate, acute, longer than the petals, shorter than the oblong (brown) capsule. — Wet sandy places, Florida and northward. June – Oct. — Stem 4′ – 12′ high, with the branches erect. Flowers small, copper-yellow. Stamens 5 – 10.

* * *Flowers scattered on the slender branches: leaves minute.*

18. **H. Sarothra,** Michx. Stem much branched; branches erect, filiform; leaves minute, subulate, bract-like; flowers small, sessile; sepals scarcely half as long as the lanceolate purple capsule. — Sandy old fields. Florida and northward. June – August. — Stems 6′ – 12′ high. Stamens 5 – 10.

19. **H. Drummondii,** Torr. & Gray. Stem much branched; leaves linear or the lower ones oblong, acute, appressed; sepals barely shorter than the ovate capsule; flowers pedicelled. — Dry barren soil, Florida, South Carolina, and westward. July and August. — Stems and branches stouter than the last. Stamens 10 – 20.

3. ELODEA, Adans.

Sepals 5. Petals 5, equal-sided, imbricated in the bud. Stamens mostly 9, and united in sets of three, with a scale-like gland between each set. Styles 3, distinct. Capsule 3-celled, 3-valved, many-seeded. Smooth perennial herbs. Flowers rose-color, in contracted lateral and terminal cymes.

1. **E. Virginica,** Nutt. Leaves oblong or oval, cordate, clasping, conspicuously dotted beneath; stamens united below the middle. — Swamps, Florida and northward. July and August. — Stems terete, 1° – 2° high.

2. **E. petiolata,** Pursh. Leaves oblong, narrowed at the base, short-petioled, obscurely dotted beneath; stamens united above the middle. — With the preceding. July and August. — Stem 2° high.

Order 19. CLUSIACEÆ. (Balsam-Tree Family.)

Trees or shrubs, with resinous yellow juice, opposite coriaceous entire dotless leaves articulated with the stem, and regular hypogynous flowers. Sepals 3 – 6. Petals 4 – 9. Stamens mostly numerous, distinct or variously united. Ovary 1 – many-celled, few – many-ovuled. Style single, often none. Fruit capsular, baccate, or drupaceous. Seeds without albumen. Embryo straight. Cotyledons thick, distinct or united.

1. CLUSIA, L.

Calyx 2-bracted, of 6 imbricated, colored sepals. Petals 4 – 9. Stamens numerous, the filaments united at the base into a thick and fleshy tube. Ovary

5 – 15-celled. Ovules numerous, fixed to a central column. Stigma large, radiate-peltate. Capsule coriaceous, globose-angled, 5 – 15-celled; the valves separating from the central column at maturity. Seeds numerous, ovate. — Parasitical tropical trees, with thick, opposite, entire and shining leaves, and chiefly polygamous, cymose, showy flowers.

1. **C. flava,** L. Leaves short-stalked, obovate, obtuse or emarginate, finely veined; flowers polygamous, single or by threes, on short axillary and terminal peduncles; sepals rounded; petals 4, oval, thick, yellow and unequal; stamens short and thick; stigma about 12-rayed; capsule pear-shaped, 12-seeded, the seeds imbedded in soft pulp. — South Florida. — A small tree.

2. CANELLA, P. Brown.

Sepals 3, rounded, concave, imbricated in the bud, persistent. Petals 5, hypogynous, oblong, convolute in the bud, deciduous. Stamens united into a tube. Anthers 15 (21 *Endl.*), adnate, linear. Ovary 3-celled. Style cylindrical. Stigmas 3. Berry globose, 1 – 3-celled, mostly 2-seeded. Seeds globose-reniform. Embryo minute, in fleshy albumen. — A large tree. Leaves alternate, near the ends of the branches, obovate, emarginate, glabrous, on short petioles. Racemes compound, shorter than the leaves, terminal. Pedicels 1-flowered. Flowers small, purple. (The proper place of this genus is undetermined, but it has been referred to this order.)

1. **C. alba,** Swartz. — South Florida. August. — Tree aromatic. Leaves 2′ long. Berry black.

Order 20. PORTULACACEÆ. (Purslane Family.)

Succulent plants, with entire leaves and regular hypogynous or perigynous flowers. Sepals 2 – 5. Petals 3 – 6, imbricated in the bud, sometimes wanting. Stamens as many as the petals and opposite them, or indefinite. Styles 3 - 6, mostly united below, stigmatic along the inside. Capsule 1 – 5-celled, few – many-seeded. Seeds campylotropous, erect from the base of the cell, or attached to a central placenta. Embryo slender, curved around mealy albumen.

Synopsis.

* Sepals 2. Petals 5 – 6.

1. CLAYTONIA. Petals and stamens 5. Capsule 3-valved, 3 – 6-seeded.
2. TALINUM. Petals 5. Stamens 10 – 30. Capsule 3-valved, many-seeded.
3. PORTULACA. Petals 5 – 6. Stamens 8 – 20. Capsule circumscissile.

* * Sepals 5. Petals none.

4. SESUVIUM. Stamens 5 - 60, inserted on the calyx. Capsule circumscissile.

1. CLAYTONIA, L. Spring-Beauty.

Sepals 2, free, persistent. Petals 5, hypogynous. Stamens 5, inserted on the claws of the petals. Style 3-cleft. Capsule 1-celled, 3-valved, 3 – 6-seeded. —

Smooth herbs, with a simple stem bearing two opposite leaves, and terminated with a loose raceme of pale rose-colored, veiny flowers.

1. **C. Virginica,** L. Leaves long (3′ – 6′), linear, acutish; petals mostly emarginate, but sometimes acute. — Damp rich soil in the upper districts. March. — Plant 4′ – 10′ long.

2. **C. Caroliniana,** Michx. Leaves short (1′ – 2′), ovate-lanceolate or oblong, tapering at the base, obtuse; petals obtuse. — Mountains of North Carolina and northward. March and April. — Smaller than the last.

2. TALINUM, Adans.

Sepals 2, free, deciduous. Petals 5, hypogynous. Stamens 10 – 30. Style 3-lobed. Capsule 3-celled at the base, 3-valved, many-seeded. — Smooth and fleshy herbs, with alternate leaves and cymose flowers.

1. **T. teretifolium,** Pursh. Stem thick, leafy; leaves linear-cylindrical; cymes on long peduncles; petals purple, fugacious. — Rocks, North Carolina and northward. June – Aug. ♃ — Stems 2′ – 4′ long. Peduncles 5′ – 8′ long.

3. PORTULACA, Tourn. Purslane.

Sepals 2, united and cohering with the ovary below, the upper portion circumscissile and deciduous with the upper part of the capsule. Petals 4 – 6, inserted with the 8 – 20 stamens on the calyx. Style 3 – 8-parted. Capsule globose, 1-celled, many-seeded. — Low, fleshy herbs, with terete or flat, mostly alternate leaves, and fugacious yellow or purple flowers.

1. **P. oleracea,** L. Leaves flat, cuneate, naked in the axils; flowers yellow; stamens 10 – 12. — Cultivated ground everywhere. — Stem prostrate.

2. **P. pilosa,** L. Leaves linear, obtuse, with a tuft of hairs in the axils; flowers purple; stamens about 20. — Key West, Florida.

4. SESUVIUM, L. Sea Purslane.

Sepals 5, free, united at the base, persistent, colored within. Petals none. Stamens 5, or numerous, inserted on the calyx. Styles 3 – 5. Capsule 3 – 5-celled, many-seeded, circumscissile. — Prostrate and fleshy maritime plants, with nearly opposite and entire leaves, and axillary purplish flowers.

1. **S. portulacastrum,** L. Leaves lanceolate and oblong, acute, on winged and clasping petioles; flowers pedicelled; sepals fleshy, lanceolate, mucronate, purple within; stamens numerous. — Sandy or muddy places along the coast, Florida and northward. May – December. ♃ — Stems diffuse, creeping, forming mats which are sometimes 6° in diameter.

2. **S. pentandrum,** Ell. Leaves spatulate-obovate, obtuse, on slightly winged and clasping petioles; flowers sessile; sepals ovate-lanceolate, stamens 5. — Muddy saline coves, Florida to North Carolina. May – November. ① ? — Stems (often erect) and flowers smaller than in the preceding.

ORDER 21. CARYOPHYLLACEÆ. (PINK FAMILY.)

Herbs with tumid joints, entire opposite or whorled, often connate leaves, and regular hypogynous or perigynous cymose flowers. Stipules dry and scarious, or none. — Sepals 4 – 5, imbricated in the bud, persistent. Petals 4 – 5, often stamen-like or none. Stamens as many as the sepals and opposite them (except Mollugo), or twice as many, or by abortion fewer. Ovary free, 1 – 5-celled, with the amphitropous or campylotropous ovules attached to a central placenta. Styles 2 – 5, distinct or partly united, stigmatic along the inner side. Fruit valvate or indehiscent, 1 – many-seeded. Embryo curved, or forming a ring around mealy albumen.

Synopsis.

TRIBE I. **ILLECEBREÆ.** Sepals distinct or united below. Petals often stamen-like or wanting. — Leaves with scarious stipules.

* Fruit indehiscent, 1-seeded (utricle).

1. PARONYCHIA. Sepals united at the base. Stamens inserted on the base of the sepals. Style long. Utricle included.
2. ANYCHIA. Sepals distinct. Stamens inserted on the base of the sepals. Style very short. Utricle partly exserted.
3. SIPHONYCHIA. Sepals united into a tube below the middle. Stamens inserted on the tube of the calyx. Style long.

* * Fruit valvate, few – many-seeded.

← Leaves opposite.

4. STIPULICIDA. Stem-leaves minute; the lowest spatulate. Flowers in terminal clusters.
5. SPERGULARIA. Leaves all linear. Flowers solitary, axillary.

← ← Leaves whorled.

6. SPERGULA. Styles 5. Stamens 5 – 10. Capsule 5-valved.
7. POLYCARPON. Styles 3. Stamens 3 – 5. Capsule 3-valved.

TRIBE II. **MOLLUGINEÆ.** Stamens alternate with the sepals, when of the same number; when three, alternate with the cells of the ovary. — Stipules none.

8. MOLLUGO. Capsule 3-celled. Leaves whorled.

TRIBE III. **ALSINEÆ.** Sepals separate or nearly so. Stamens opposite the sepals when of the same number. Ovary sessile. — Stipules none.

* Valves of the capsule as many as the styles.

9. SAGINA. Styles and valves 4 – 5.
10. ALSINE. Styles and valves 3.

* * Valves or teeth of the capsule twice as many as the styles.

11. ARENARIA. Valves of the capsule 2 – 4, each soon 2-cleft. Petals entire.
12. STELLARIA. Valves of the capsule 6 – 10. Petals 2-cleft.
13. CERASTIUM. Capsule 8 – 10-toothed.

TRIBE IV. **SILENEÆ.** Sepals united into a tube. Petals and stamens inserted on the stipe of the ovary. — Stipules none.

14. SILENE. Styles 3. Capsule 6-toothed.
15. SAPONARIA. Styles 2. Capsule 4-toothed.
16. AGROSTEMMA. Styles 5. Capsule 5-toothed.

1. PARONYCHIA, Tourn.

Sepals 5, united at the base, concave and mucronate or awned at the apex. Petals bristle-like or tooth-like, alternate with the 5 stamens, and inserted with them on the base of the calyx. Style long, 2-cleft. Utricle included. Seed resupinate. Radicle superior or ascending. — Low herbs, with conspicuous silvery stipules, and minute flowers in loose or compact cymes.

1. **P. dichotoma,** Nutt. Smooth; stems slender, erect; leaves linear-subulate; those of the barren stems imbricated; cymes fastigiate, diffuse; sepals linear, 3-ribbed, slender-pointed; petals minute, bristle-like. (Anychia argyrocoma, *Ell.*) — Rocks on the mountains of North Carolina, and westward. July – Nov. ♃ — Stems 6′ – 12′ high.

2. **P. argyrocoma,** Nutt. Minutely pubescent; stems tufted, ascending; leaves linear, acute; cymes capitate, the flowers concealed by the large silvery stipules; sepals lanceolate, hairy, slender-pointed; petals minute, tooth-like. — Mountains of Georgia and North Carolina. July – Sept. ♃ — Stems 6′ – 10′ high. Stipules nearly as long as the leaves.

3. **P. herniarioides,** Nutt. Rough-pubescent; stems prostrate, diffusely-branched; leaves oval or oblong, mucronate; flowers axillary, solitary, sessile; sepals subulate, with a short and spreading point. (Anychia herniarioides, *Michx.*) — Dry sand ridges in the middle districts, Georgia to North Carolina. July – Oct. ① — Stems 4′ – 6′ long. Leaves 3″ – 4″ long.

4. **P. Baldwinii.** Finely pubescent; stems prostrate, diffusely-branched; branches alternate, one-sided, filiform; leaves lanceolate or ovate-lanceolate, acute, narrowed into a petiole; cymes diffuse, naked; sepals oblong, 3-ribbed, ciliate, short-pointed; petals bristle-like, as long as the stamens; utricle equalling or rather longer than the sepals; style 2-cleft to the middle. (Anychia Baldwinii, *Torr. & Gray.*) — Dry sandy soil, Florida and Georgia. July – Oct. ① and ② — Stems $1\frac{1}{2}$° – 3° long. Upper leaves sometimes alternate.

2. ANYCHIA, Michx.

Sepals 5, distinct, slightly mucronate at the apex. Petals none. Stamens 2 – 3, inserted on the base of the calyx. Style very short. Stigmas spreading. Utricle exserted. Seed erect. Radicle inferior. — An erect slender annual, with forking setaceous spreading branches. Leaves thin, oblong, obtuse, narrowed at the base. Flowers minute, solitary or clustered in the forks of the branches, greenish.

1. **A. dichotoma,** Michx. (Queria Canadensis, *L.*) — Barren hills. South Carolina and northward. July and August. — Stem 4′ – 10′ high.

3. SIPHONYCHIA, Torr. & Gray.

Sepals 5, united to the middle, concave and petal-like above, obtuse or mucronate. Petals 5, bristle-like, inserted with the 5 stamens on the throat of the calyx. Style slender, 2-cleft. Utricle included. Seed resupinate. Radicle superior. — Erect or diffusely prostrate herbs. Cymes dense-flowered. Flowers white.

1. **S. Americana,** Torr. & Gray. Stems prostrate, diffuse, pubescent in lines; leaves lanceolate, narrowed at the base; the radical ones larger and crowded; flowers obovate, solitary in the forks of the stem, and clustered at the end of the branches; sepals rounded and incurved at the apex, the tube bristly with hooked hairs; petals minute. (Herniaria Americana, *Nutt.* Paronychia urceolata, *Shuttl.*) — Sandy banks of rivers, Florida to South Carolina, and westward. June – Oct. ① or ② — Stems 1° – 3° long. Leaves sometimes falcate and incrusted with brownish particles. Stipules small.

2. **S. diffusa,** n. sp. Pubescent; stems prostrate, diffusely-branched; leaves lanceolate, obtuse, narrowed at the base; flowers small, in compact, rectangular cymes, terminating all the branches; sepals linear, slightly concave and mucronate at the apex, the tube bristly with hooked hairs; petals bristle-like. — Dry sandy pine barrens, Florida. June – Oct. ① — Stems 1° long. Stipules conspicuous, on young plants half as long as the leaves, at length 2-parted. Cymes very numerous.

3. **S. erecta,** n. sp. Stems smooth, clustered, erect, rigid, mostly simple; leaves erect, linear, acute, pubescent on the margins, those of the barren stems imbricated; cyme compound, rectangular, fastigiate, compact; sepals lanceolate, smooth, acutish, or obscurely mucronate at the apex, the tube smooth and furrowed; petals bristle-like, half as long as the stamens. — Sands along the west coast of Florida. June – Nov. ↳ — Root woody. Stems 6′ – 12′ high. Stipules half as long as the leaves.

4. **S. Rugelii.** Annual; stem erect, successively forking, clothed with a short and rather dense pubescence, as also the leaves and bracts; leaves oblanceolate, abruptly pointed, shorter than the internodes, the upper ones linear; stipules ¼ – ½ as long as the leaves, soon 2 – 4-parted; cymes numerous, terminal, rather loosely flowered; calyx-tube short, pubescent, the linear-lanceolate divisions conspicuously mucronate, white; petals bristle-like; style included. (Paronychia Rugelii, *Shuttl.*) — East Florida. — Stems 1° high, at length diffuse?

4. STIPULICIDA, Michx.

Sepals 5, emarginate, white-margined. Petals 5, spatulate, 2-toothed near the base, longer than the sepals, withering-persistent. Stamens 3, opposite the inner sepals. Style very short, 3-parted. Capsule 1-celled, 3-valved, many-seeded. — A small perennial, with an erect forking stem. Stem-leaves minute, subulate, with adnate pectinate stipules. Radical leaves spatulate, clustered, growing from a tuft of bristly stipules. Flowers white, in terminal clusters.

1. **S. setacea,** Michx. — Low sandy pine barrens, Florida to North Carolina. April – June. — Stem 3′ – 6′ high, the branches spreading and curving.

5. SPERGULARIA, Pers.

Sepals 5. Petals 5, oval, entire. Stamens 2 – 10. Styles 3 – 5. Capsule 3 – 5-valved; the valves when 5, alternate with the sepals. — A low maritime herb, with opposite fleshy leaves, and conspicuous scarious stipules. Flowers axillary, solitary, rose-colored.

1. **S. rubra,** Pers. — Sands or marshes along the coast, Florida and northward. April and May. ① — Stems prostrate, much branched. Leaves linear, longer than the joints. Seed with or without a membranaceous margin.

6. SPERGULA, L. Spurrey.

Sepals 5. Petals 5, entire. Stamens 5 or 10. Styles 5. Capsule 5-valved, the valves opposite the sepals. Embryo forming a ring around the albumen. — Leaves whorled. Flowers cymose, white.

1. **S. arvensis,** L. Stem erect; leaves fleshy, narrow-linear, several in a whorl; cyme loose, long-peduncled; fruiting pedicels reflexed; stamens 10; seeds rough. — Cultivated fields, Florida and northward: introduced. ①.

7. POLYCARPON, L.

Sepals 5, carinate. Petals 5, emarginate, shorter than the sepals. Stamens 3-5. Styles 3, very short. Capsule 3-valved. — Low annuals, with whorled leaves, and minute flowers, in terminal cymes.

1. **P. tetraphyllum,** L. Stems (3′-6′) forking, diffuse; leaves spatulate-obovate, the lower ones 4 in a whorl, the upper opposite; sepals acute; stipules conspicuous. — Near Charleston. Introduced. May and June.

8. MOLLUGO, L.

Sepals 5. Petals none. Stamens 5 and alternate with the sepals, or 3 and alternate with the cells of the ovary. Styles 3, short. Capsule 3-valved, 3-celled, many-seeded. — Prostrate diffusely-branched annuals. Leaves whorled. Flowers white, on slender axillary peduncles.

1. **M. verticillata,** L. Smooth; leaves spatulate-lanceolate, unequal, in whorls of 4-8; fruiting peduncles reflexed; stamens 3. — Cultivated ground, common. Introduced. May-August.

9. SAGINA, L.

Sepals 4-5. Petals 4-5, entire, or wanting. Stamens 4-10. Styles 4-5, alternate with the sepals. Capsule 4-5-valved; the valves entire, opposite the sepals. — Small herbs, with filiform forking stems, subulate leaves, and solitary flowers.

1. **S. Elliottii,** Fenzl. Smooth; stems erect or ascending, tufted; peduncles erect; petals and sepals 5, equal, obtuse; stamens 10. (Spergula decumbens, *Ell.*) — Damp cultivated ground, common. April-June. ① — Stems 2′-6′ high. Peduncles 2-3 times as long as the sharp-pointed leaves.

10. ALSINE, Tourn.

Sepals 5. Petals 5. Stamens 10. Styles 3. Capsule 1-celled, 3-valved, the valves entire, opposite the inner sepals. — Low slender herbs, with linear or subulate leaves, and white cymose or solitary flowers.

1. **A. squarrosa,** Fenzl. Stems tufted; leaves subulate, rigid, those of the glandular flowering stems distant, of the sterile stems imbricated, with spreading tips; sepals ovate, obtuse, shorter than the capsule. (Arenaria squarrosa, *Michx.*) — Dry sand-hills, West Florida and northward. April and May. ♃ — Stems 6′ – 10′ high. Cymes few-flowered. Pedicels rigid.

2. **A. glabra,** Gray. Smooth; stems filiform, sparingly branched; leaves tender, narrow-linear, obtuse, spreading; cyme few-flowered, spreading; sepals oblong, obtuse, faintly 3-ribbed, as long as the capsule. (Arenaria glabra, *Michx.*) — Mountains of North Carolina. July. ♃ ? — Stems tufted, 4′ – 6′ high. Cymes leafy. Pedicels setaceous. Leaves ½′ – 1′ long.

3. **A. patula,** Gray. Minutely pubescent; stem filiform, diffusely branched from the base; leaves narrow-linear, spreading; cyme spreading, few – many-flowered; pedicels very slender; petals spatulate, emarginate, twice the length of the lanceolate acute 3 – 5-nerved sepals. (Arenaria patula, *Michx.*) — Rocks around Knoxville, Tennessee, and northward. — Stems 6′ – 10′ high.

4. **A. Michauxii,** Fenzl. Smooth; stems tufted, erect or diffuse, straight; leaves linear-subulate, erect, spreading or recurved, much clustered in the axils; cymes spreading or contracted; petals oblong-obovate, twice as long as the rigid ovate acute 3-ribbed sepals. (Arenaria stricta, *Michx.*) — Rocks and barren soil, Georgia and northward. May and June. — Stems 3′ – 10′ high.

5. **A. brevifolia.** Stems smooth, not tufted, erect, filiform, simple, 2 – 5-flowered; leaves minute (1″ – 2″), erect, lance-subulate; sepals oblong, obtuse, as long as the capsule; petals twice as long as the sepals. (Arenaria brevifolia, *Nutt.*) — Rocks in the upper districts of Georgia. ① — Stems 2′ – 4′ long, bearing 3 or 4 pairs of leaves. Flowers small, on filiform peduncles.

11. ARENARIA, L. Sandwort.

Petals 1 – 5, or none. Styles 2 – 4. Capsule opening above by as many valves as there are styles, each valve soon splitting into two pieces. Otherwise like Alsine.

1. **A. diffusa,** Ell. Downy; stem elongated, prostrate, alternately short-branched; leaves lanceolate; peduncles longer than the leaves, lateral, reflexed in fruit; petals 1 – 5, shorter than the sepals, often wanting. (Stellaria elongata, *Nutt.* Micropetalon lanuginosum, *Pers.*) — Shady banks, Florida to North Carolina and westward. May – October. ♃ — Stems 1° – 4° long.

2. **A. serpyllifolia,** L. Downy; stems diffusely branched; leaves small, ovate, acute, the lowest narrowed into a petiole; flowers cymose; petals much shorter than the lanceolate acuminate sepals. — Waste places, Florida and northward. Introduced. April and May. ① — Stems 6′ – 12′ long. Leaves ½′ long.

12. STELLARIA, L. Chickweed. Starwort.

Sepals 4 – 5. Petals 4 – 5, 2-cleft, or 2-parted. Stamens 3 – 10. Styles 3 – 5, opposite the sepals. Capsule 1-celled, opening by twice as many valves as there are styles, many-seeded. — Stems weak. Flowers white, on terminal peduncles, becoming lateral in fruit.

1. **S. pubera,** Michx. Perennial; stems erect or diffuse, forking, hairy in lines; leaves oblong, acutish, narrowed at the base, sessile; petals longer than the sepals. — Shady rocks in the upper districts and northward. April and May. — Stems 6′–12′ high. Flowers showy.

2. **S. media,** Smith. Annual; stems prostrate, forking, pubescent in lines; leaves ovate or oblong, acute, the lower ones petioled; petals shorter than the sepals. — Yards and gardens. March and April. Introduced.

3. **S. prostrata,** Baldw. Smooth or nearly so; stems forking, prostrate; leaves ovate, acute, all on slender petioles, the lower ones often cordate; petals twice as long as the sepals; seeds rough-edged. — Damp shades, Georgia, Florida, and westward. March and April. ☉ — Stems 1°–2° long. Petiole mostly longer than the limb.

4. **S. uniflora,** Walt. Smooth; stems erect from a prostrate base; leaves remote, narrow-linear, sessile; peduncles very long (2′–4′), erect; petals obcordate, twice as long as the calyx. — River swamps, South Carolina and North Carolina. May. ☉? — Stems 6′–12′ high. Leaves 1′ long. — Perhaps a species of Alsine.

13. CERASTIUM, L. Mouse-ear.

Sepals 4–5. Petals 4–5, obcordate or 2-cleft. Stamens 10. Styles 4–5. Capsule cylindrical, 8–10-toothed, many-seeded. — Herbs. Flowers white, solitary or cymose, peduncled.

* *Petals not longer than the sepals.*

1. **C. vulgatum,** L. Villous and somewhat clammy; stems ascending; leaves oval, remote, the lowest obovate; cymes crowded in the bud, spreading in fruit; sepals lanceolate, acute, as long as the peduncles, and half as long as the slender capsule. — Fields, Florida and northward. April and May. ☉ — Stems 6′–12′ high.

2. **C. viscosum,** L. Hairy and clammy; stems ascending; leaves lance-oblong, obtuse, the lowest wedge-shaped; cymes loose in the bud; sepals oblong-ovate, obtuse, shorter than the peduncles. — Fields, Florida and northward. April and May. ☉ — Flowers and capsules larger than in No. 1.

* * *Petals longer than the sepals.*

3. **C. arvense,** L. Hairy or downy; stems numerous, naked above; leaves narrowly or broadly lanceolate; cymes rather few-flowered; petals obcordate, twice as long as the oblong sepals. — Rocky or dry soil, chiefly in the upper districts. May and June. ♃ — Stems 6′–12′ high. Leaves seldom 1′ long. Flowers ½′ wide. Capsule rather longer than the calyx.

4. **C. nutans,** Raf. Clammy-pubescent; stems tufted, furrowed; leaves lanceolate; cymes ample, many-flowered; petals oblong, emarginate, rather longer than the oblong sepals. — Low grounds, North Carolina and Tennessee, and northward. ☉ — Stems 1° high. Peduncles long. Capsule curved, three times as long as the calyx.

14. SILENE, L. Catchfly.

Sepals united into a 5-toothed tube. Petals 5, long-clawed, inserted with the 10 stamens on the stipe of the ovary, commonly crowned with two scales at the base of the limb. Styles 3. Capsule 1-celled, or 3-celled at the base, opening by 6 teeth, many-seeded. — Leaves mostly connate. Flowers cymose, often showy.

** Perennials: flowers showy.*

+ Petals gash-fimbriate, crownless.

1. **S. stellata,** Ait. Leaves in whorls of four, lance-ovate, acuminate, the uppermost opposite; flowers white, in a large spreading panicle; calyx inflated, bell-shaped. — Dry woods in the upper districts, and northward. June–August. — Stems 2°–3° high, downy, branching above.

2. **S. ovata,** Pursh. Rough-pubescent; leaves large (4′–5′), opposite, oblong-ovate, acuminate; flowers white, in a contracted lanceolate panicle; calyx tubular. — Mountains of Georgia and Carolina. July. — Stems stout, 2°–4° high.

3. **S. Baldwinii,** Nutt. Villous; stems low, slender, bearing runners at the creeping base; leaves opposite, spatulate; the upper ones oblong, sessile; cymes few-flowered; flowers very large, white or pale rose-color, on slender pedicels; calyx tubular. — Low shady woods, Georgia and Florida. April and May. — Stems 6′–12′ high. Leaves thin. Flowers 2′ wide.

+ + Petals emarginate or 2-cleft, crowned.

4. **S. Virginica,** L. Clammy-pubescent; leaves abruptly pointed, the lowest ones clustered, spatulate-obovate, on fringed petioles, the upper small, remote, lanceolate, sessile; cymes loosely few-flowered; calyx tubular-club-shaped, oblong and nodding in fruit; petals crimson, lanceolate, 2-cleft. — Rich open woods, chiefly in the upper districts. June and July. — Stems 1°–2° high. Flowers 1′ wide.

5. **S. regia,** Sims. Viscid-pubescent and roughish; stem tall (3°–4°) and erect, branched; leaves ovate-lanceolate, the upper ones acuminate; flowers large, bright scarlet, short-stalked, clustered and forming a strict panicle; calyx long, cylindrical, striate, dilated in fruit; petals oblanceolate, generally entire; stamens and style exserted. — Prairies of Alabama and westward. July.

6. **S. rotundifolia,** Nutt. Hairy and viscid; stems weak, decumbent, branched; leaves thin, roundish, abruptly acuminate at each end, the lowest obovate; flowers few, large, bright scarlet; calyx cylindrical; petals 2-cleft, with the lobes cut-toothed. — Shady rocky banks, Tennessee and northward. June–August. — Stems 2° long. Flowers showy.

7. **S. Pennsylvanica,** Michx. Clammy-pubescent; stems low, clustered; lowest leaves spatulate-obovate, the upper lance-oblong, mostly obtuse; cymes dense-flowered; calyx club-shaped, erect; petals white or rose-color, obovate, emarginate or entire. — Rocky hills, chiefly in the upper districts and northward. March and April. — Stems 6′–12′ high.

** * Annuals: flowers small, crowned, expanding at night.*

8. **S. Antirrhina,** L. Stem slender, smoothish, clammy below the upper joints; leaves linear, acute, sessile, the lowest lanceolate, narrowed into a petiole; flowers panicled; calyx smooth; petals obcordate, rose-colored. — Dry old fields, Florida and northward. May and June. — Stems 6′–2° high, simple or branched. Flowers minute.

9. **S. quinquevulnera,** L. Hairy; stem branching; leaves spatulate, the upper ones linear; flowers in 1-sided racemes; calyx hairy; petals rounded, entire, pink or crimson with a paler border. — Near Charleston. Naturalized. — Stem 1° high.

15. SAPONARIA, L. Soapwort.

Calyx tubular, terete, 5-toothed. Petals long-clawed. Stamens 10. Styles 2. Capsule sessile or short-stiped, 1-celled, or 2-celled at the base, 4-toothed at the apex. — Cymes dense-flowered.

1. **S. officinalis,** L. Perennial; stems stout, erect, smooth; leaves ovate, connate, strongly 3-ribbed; petals crowned, white or rose-color, mostly double. — Waste places. Naturalized. — Stems 1°–2° high.

16. AGROSTEMMA, L. Corn-Cockle.

Calyx tubular, with 5 elongated linear deciduous lobes. Petals 5, entire, crownless. Stamens 10. Styles 5. Capsule 1-celled, 5-toothed. — Annual or biennial pubescent herbs, with linear leaves, and showy purple flowers on elongated peduncles.

1. **A. Githago,** L. Plant (1°–2° high) whitened with long appressed hairs; stem forking; petals obovate, emarginate, shorter than the lobes of the calyx. — Grain fields. Introduced. June and July. ⓘ — Peduncles 4′–6′ long. Flowers 1′ wide.

Order 22. MALVACEÆ. (Mallow Family.)

Mucilaginous herbs or shrubs, with palmately veined alternate stipulate leaves, and regular monadelphous flowers on jointed peduncles. — Sepals 5, united at the base, valvate in the bud, persistent, often with a calyx-like involucel. Petals 5, convolute in the bud. Stamens numerous, united into a column which is continuous with the claws of the petals: anthers 1-celled, opening transversely. Ovaries united into a ring, or forming a several-celled capsule. Styles separate or united. Seeds kidney-shaped. Albumen scarce or none. Embryo large, curved, with leafy cotyledons. Pubescence commonly stellate. Pollen grains hispid.

Synopsis.

Tribe I. **MALVEÆ.** — Carpels as many as the stigmas, 1-few-seeded, disposed in a circle around a central axis, separating at maturity from the axis and from each other. Anthers borne at the apex of the column.

* Carpels 1-seeded.

+ Stigmas occupying the inner face of the styles.

1. MALVA. Carpels beakless. No process within.
2. CALLIRRHOË. Carpels beaked, and bearing a dorsal process above the seed within.

+ + Stigmas capitate.

3. MALVASTRUM. Involucel 2 – 3-leaved. Ovule peritropous-ascending. Radicle inferior.
4. SIDA. Involucel none. Ovule resupinate-pendulous. Radicle superior.

* * Carpels 2 – few-seeded.

5. ABUTILON. Carpels 1-celled. Involucel none.
6. MODIOLA. Carpels transversely 2-celled. Involucel 3-leaved.

TRIBE. II. **URENEÆ.** — Carpels half as many as the stigmas, separating at maturity. Anthers borne above the middle of the column.

7. PAVONIA. Carpels 5, dry, 1-seeded. Involucel 5 – 15-leaved.

TRIBE III. **HIBISCEÆ.** — Carpels as many as the stigmas, united and forming at maturity a loculicidal capsule. Column bearing the anthers throughout, or from above the middle.

8. KOSTELETZKYA. Cells of the depressed capsule 1-seeded.
9. HIBISCUS. Cells of the globose or oblong capsule few – many-seeded.

1. MALVA, L. Mallow.

Involucel 3-leaved, persistent. Petals obcordate. Styles 9 – 20, filiform, stigmatic on the inner face. Carpels broadly reniform, beakless, 1-seeded, indehiscent, disposed in a circle around the central axis, from which they separate at maturity. Embryo nearly annular. Radicle inferior. — Herbs. Leaves rounded. Flowers axillary, not yellow.

1. **M. rotundifolia,** L. Stems several, prostrate; leaves long-petioled, round-cordate, crenate and crenately-lobed; flowers single or clustered, white veined with purple; carpels even. — Around dwellings. Introduced. ♃.

2. CALLIRRHOË, Nutt.

Involucel 1 – 3-leaved and persistent, or none. Petals wedge-shaped, entire, or crenate. Styles as in Malva. Carpels numerous, with a short and naked beak, and a ligulate dorsal process below the beak within. Embryo curved. Radicle inferior. — Perennial herbs. Leaves palmately-lobed, or angled. Flowers showy, purple or whitish.

1. **C. triangulata,** Gray. Rough-pubescent; stem ascending from a perpendicular rhizoma, branching above; leaves triangular, coarsely and unequally crenate, the lowest ones long-petioled and cordate, the upper 3 – 5-lobed; flowers approximate, panicled, longer than the pedicels; involucel 3-leaved, the leaves linear; carpels at length 2-valved. (Malva triangulata, *Leavenworth.*) — Dry soil in the upper districts of Alabama to North Carolina and northwestward. July. — Stem 2° – 3° high. Flowers 1′ – 1½′ wide, purple.

2. **C. Papaver,** Gray. Rough with scattered appressed and rigid hairs; stems low, simple; leaves 3 – 5-parted; the lobes oblong or lanceolate, toothed or entire; flowers few, solitary, axillary, long-peduncled; involucel 1 – 3-leaved, or none; petals finely crenate; carpels indehiscent. — Rich open woods. Georgia,

Florida, and westward. May – September. — Stems 1° high. Flowers purple, 2′ wide, on peduncles which are sometimes 1° long.

3. **C. alcæoides,** Gray. Strigose-pubescent; stems slender (1° high); lower leaves triangular-cordate, incised; the upper 5 – 7-parted, laciniate, the uppermost divided into linear segments; flowers corymbose, on slender peduncles (rose-color or white); involucel none; carpels obtusely beaked, crested and strongly wrinkled on the back. (Sida alcæoides, *Michx.*) — Barren oak lands, Tennessee.

3. MALVASTRUM, Gray.

Involucel 1 – 3-leaved or none. Styles 5 – 20. Stigmas capitate. Carpels beaked or beakless, 1-seeded. Seed ascending. Embryo curved or annular. Radicle inferior. — Herbs or shrubby plants, rough with rigid hairs. Flowers yellow.

1. **M. tricuspidatum,** Gray. Perennial or shrubby; stem branching; leaves ovate or oblong-ovate, serrate, acute, petioled; stipules lanceolate; flowers in leafy spiked racemes; petals obliquely truncated; carpels 10 – 12, more or less distinctly 3-toothed or awned at the apex. — South Florida. — Stems 1° high. Involucel 3-leaved.

2. **M. angustum,** Gray. Annual; stem erect, branching; leaves lanceolate, sparingly serrate, short-petioled; stipules bristle-like; flowers axillary, mostly solitary; involucel setaceous, 2 – 3-leaved; carpels 5, circular, awnless, at length 2-valved. (Sida hispida, *Pursh.* ? *Ell.* ?) — South Carolina and westward. — Stems 6′ – 12′ high. Calyx enlarged in fruit.

4. SIDA, L.

Involucel none. Calyx angular. Styles 5 – 15. Stigmas capitate. Ovaries 1-celled. Carpels erect, mostly 2-valved and 2-beaked at the apex, separating at maturity from each other, and from the central axis. Seed resupinate, suspended, 3-angled. Embryo curved. Radicle superior. — Branching herbs or shrubs, with chiefly undivided leaves, and small yellow or reddish flowers in their axils.

* *Leaves, at least the lower ones, cordate: carpels* 5.

1. **S. spinosa,** L. Annual, minutely pubescent; branches erect; leaves oblong-ovate, acute, serrate, the slender petioles often with a tubercular spine at the base, the lower ones cordate; stipules setaceous, half as long as the petioles; flowers single or clustered, on short erect peduncles; carpels faintly reticulated, each pointed with two erect subulate spines. — Waste places, Florida and northward. July – September. — Stems 1° – 2° high. Flowers ½′ wide, yellow.

2. **S. supina,** L'Her. Perennial, tomentose; stems divided at the base into slender simple ascending or prostrate branches; leaves all round-cordate, crenate, rounded at the apex, hoary beneath; the slender petioles spineless at the base; stipules minute, subulate, deciduous; flowers solitary; the peduncles half as long as the petioles and reflexed in fruit; carpels downy, reticulated, almost beakless, opening irregularly near the membranaceous base. (S. ovata, *Cav.* S. procumbens, *Swartz.*) — South Florida. October. — Stems 6′ – 12′

long; leaves $\frac{1}{2}'-1'$ long; the limb scarcely longer than the petiole. Flowers yellow, not half as large as in the preceding.

* * *Leaves not cordate: carpels* 7–12.

3. **S. stipulata,** Cav. Nearly smooth; stem erect or curving; leaves and branches distichous; leaves lanceolate and oblong, acute, unequally serrate, on short petioles; stipules linear-subulate, longer than the petioles, smooth, persistent; flowers single or clustered, on peduncles 3–4 times as long as the petioles; carpels 10, strongly reticulated, pointed with two short and incurved spines. (S. glabra, *Nutt.*) — Waste places and around dwellings, Florida. June–November. ① or ↯ — Stems 1°–3° high. Leaves 2′–3′ long. Flowers 1′ wide, yellow, expanding at mid-day. Petals obliquely obcordate.

4. **S. rhombifolia,** L. Downy; stems erect, much branched; leaves rhombic-oblong, obtuse at each end, serrate, short-petioled, pale beneath; stipules setaceous, longer than the petioles, caducous; peduncles solitary, more than half as long as the leaves; carpels 10–12, even, pointed with a single subulate spine, indehiscent. — Around dwellings, Florida to North Carolina and westward. July–October. ① — Stems 2°–3° high. Leaves 2′–3′ long. Flowers yellow, smaller than in No. 3.

5. **S. ciliaris,** Cav. Rough with appressed rigid hairs; stems prostrate; leaves elliptical, obtuse at both ends, serrate above the middle, smooth above, the uppermost approximate; stipules setaceous, and like the calyx fringed with long hairs; flowers nearly sessile in the axils of the upper leaves; carpels 7, strongly reticulated, pointed with two minute barbed spines. — Key West. ↯ — Stems 6′ long. Leaves $\frac{1}{2}'-1'$ long. Flowers small, red.

6. **S. Elliottii,** Torr. & Gray. Perennial; stems slender, roughish, erect, with long and straight branches; leaves smoothish, lanceolate or linear, acute, serrate, on short petioles; stipules setaceous; flowers large, single; peduncles longer than the petioles; carpels 10–12, strongly reticulated, truncate or slightly 2-pointed. (S. gracilis, *Ell.*, not of *Rich.*) — Open woods, Florida to North Carolina and westward. July–October. — Stems 1°–3° high. Leaves 1′–2′ long. Flowers 1′ wide, yellow.

7. **S. Lindheimeri,** Engel. & Gray. Stem shrubby, smooth, slender, much branched; leaves rigid, narrow-linear, obtuse, serrate, paler and downy beneath, the short petioles spineless at the base; stipules subulate, persistent, as long as the petioles; peduncles about as long as the leaves; carpels 10, faintly reticulated, pointed with two short and broad spines. — Key West. — Stems 1° high. Leaves 1′ long. Petals barely exceeding the calyx in length.

5. ABUTILON, Tourn. Indian Mallow.

Involucel none. Stigma capitate. Ovaries 5 or more, 1-celled, 2–9-ovuled. Carpels 1–6-seeded, partly 2-valved, tardily separating from each other or from the central axis. Radicle ascending. — Leaves cordate. Flowers yellow, white, or purplish.

1. **A. Avicennæ,** Gærtn. Tomentose; leaves round-cordate, acuminate, crenate; peduncles axillary, 1–3-flowered, shorter than the long petioles; car-

pels 12–14, hairy, inflated, truncate, 3-seeded, with two long and spreading spines. — Waste places chiefly in the middle and upper districts. Introduced. ⓘ — Stem 2°–5° high. Leaves 4′–6′ wide. Flowers orange-red.

2. **A. Hulseanum,** Torr. Stem hispidly pilose; leaves orbicular-ovate, abruptly acuminate, velvety beneath with a whitish pubescence, roughish-tomentose above, crenate-dentate; peduncles axillary in the upper leaves, several-flowered; styles about 12. — Tampa Bay, Florida. — Leaves 3 inches or more in diameter. Flowers $1\frac{1}{2}'$ in diameter, purplish; pedicels very short.

3. **A. Jacquini,** Don. Stem erect (2°–3°), branching, smooth or soft-downy; leaves long-petioled, cordate or oblong-cordate, acuminate, unequally crenate, velvety on both surfaces and hoary beneath, or roughish above; peduncles solitary in the upper axils, 1-flowered, about the length of the petioles, or the upper ones longer; lobes of the calyx ovate or oblong, shorter than the yellow petals; carpels 8–10, rigid, hairy, longer than the calyx, acute or beaked, 3-seeded. (A. peraffine, *Shuttl.* Lavatera Americana, *L.* Sida abutiloides, *Jacq.* S. lignosa, *Cav.*) — South Florida. — Flowers 9″–12″ wide.

4. **A. crispum,** Gray. Hoary-tomentose; stem sparingly branched; leaves round-cordate, acuminate, finely crenate; peduncles axillary, 1-flowered, elongated, filiform, refracted after flowering; carpels 10, beakless, inflated, corrugated, hispid, 2-seeded. — Key West. — Stem slender, 1°–2° high. Leaves 1′–2′ long, the upper ones nearly sessile. Peduncles as long as the leaves. Flowers 4″–6″ wide, white.

6. MODIOLA, Mœnch.

Involucel 3-leaved, persistent. Stamens 10–20. Ovaries 14–20, transversely 2-celled, each cell 1-ovuled. Stigmas capitate. Carpels 2-valved, 2-seeded, separating at maturity from each other and from the central axis, each valve tipped with a slender spine. — Prostrate herbs, with palmately divided leaves, and small axillary flowers.

1. **M. multifida,** Mœnch. Hirsute; stems diffuse; leaves long-petioled, cordate-ovate, more or less deeply 5–7-parted; the divisions lobed and toothed; peduncles longer than the petioles; carpels hispid. (Malva Caroliniana, *L.*) — Waste places, Florida to North Carolina and westward. July–October. ♃ — Stems 1°–2° long. Earliest leaves orbicular, undivided. Petals red, as long as the calyx.

7. PAVONIA, Cav.

Involucel 5–15-leaved, persistent. Ovaries 5, 1-celled, 1-ovuled. Stigmas 10, capitate. Carpels indehiscent or somewhat 2-valved, naked or armed at the apex with three hispid awns, separating at maturity. Embryo incurved. Radicle inferior. — Chiefly shrubs, with petioled stipulate leaves, and solitary flowers on axillary peduncles.

1. **P. Lecontei,** Torr. & Gray. Stem much branched, roughish-pubescent; leaves ovate or somewhat sagittate, obtusely toothed, densely pubescent

and hoary beneath, rough above, longer than the petioles; involucel of 5–6 ovate leaves, which are slightly united at the base; carpels obovate, awnless, strongly reticulate. — South Georgia, collected by *Leconte*. — Stem 4°–5° high. Leaves 1′ long. Flowers large, pale red.

8. KOSTELETZKYA, Presl. (HIBISCUS, L. in part.)

Capsule depressed, the cells 1-seeded. — Otherwise as in Hibiscus.

1. **K. Virginica,** Presl. Rough-hairy; stem erect, stout, branching; lower leaves ovate, cordate, serrate, mostly 3-lobed, the upper ones narrower and usually entire; flowers (purple) in terminal racemes. — Var. ALTHEÆFOLIA. (Hibiscus altheæfolius, *Shuttl.*) Densely stellate-pubescent and somewhat hoary; leaves all undivided, ovate or ovate-lanceolate, acuminate, unequally toothed-serrate; racemes dense-flowered; capsule hirsute. — Var. SMILACIFOLIA. (Hibiscus smilacifolius, *Shuttl.*) Stem more slender, smoothish below; leaves all hastate, with lanceolate serrate lobes; racemes few-flowered. — Marshes and low grounds near the coast, Florida and northward (the varieties near Manatee, South Florida, *Rugel.*). July–September. ♃ — Stem 2°–4° high. Flowers 1½′–2′ wide.

9. HIBISCUS, L. ROSE-MALLOW.

Involucel many-leaved or many-cleft, and, like the calyx, persistent. Stigmas 5, peltate or capitate. Capsule globose or oblong, 5-celled, loculicidally 5-valved, many-seeded. — Herbs, shrubs, or trees, with petioled stipulate leaves, and large showy flowers, on axillary peduncles.

** Leaves of the involucel forked.*

1. **H. aculeatus,** Walt. Muricate-hispid; leaves round-cordate, divided into 3–5 coarsely toothed and spreading lobes, the upper ones narrower and mostly entire; flowers yellow, with a purple centre, short-peduncled; involucel 10–12-leaved; capsule hispid; seeds smooth. — Margins of swamps and ponds, Florida to South Carolina, and westward. July. ♃ — Stems 2°–6° high. Flowers 4′ wide.

** * Leaves of the involucel entire.*

+ Perennial herbs: stipules deciduous.

2. **H. Moscheutos,** L. Tomentose; leaves broadly ovate, acuminate, toothed-serrate, mostly 3-lobed above the middle, rounded or slightly cordate at the base, hoary beneath; peduncles often partly adnate to the petioles; flowers white or pale rose-color with a crimson centre; seeds smooth. — Ponds and marshes, Georgia, northward and westward. July. — Stems 3°–5° high. Leaves 3′–5′ long. Flowers 4′–5′ wide.

3. **H. incanus,** Wendl. Leaves lanceolate and ovate-lanceolate, not lobed, slightly cordate, acuminate, finely serrate, hoary on both sides; flowers pale yellow with a crimson centre, often umbelled; peduncles mostly free from the petioles; capsule and seeds smooth. — Ponds and marshes, Florida to South Carolina, and westward. June and July. — Stems 2°–5° high. Leaves 3′–6′ long. Flowers 6′–8′ wide.

4. **H. grandiflorus,** Michx. Tomentose; leaves round-ovate, cordate, mostly 3-lobed, toothed-serrate, hoary beneath; flowers very large, pale rose-color with a deep red centre; peduncles free from the petioles; capsule velvety; seeds smooth. — Marshes near the coast, Florida, Georgia, and westward. July. — Stems several from one root, 3° – 5° high. Leaves 4′ – 6′ long and nearly the same in width. Flowers 10′ – 12′ wide.

5. **H. Carolinianus,** Muhl.? Ell. Smooth; leaves cordate-ovate, acuminate, serrate, sometimes slightly 3-lobed; flowers purple; peduncles slightly adhering to the petioles; seeds hispid. — On Wilmington Island, Georgia. July – September. — Stems 4° – 6° high. Leaves 4′ – 6′ long. Flowers 6′ – 8′ wide. (*)

6. **H. militaris,** Cav. Smooth; leaves thin, on long and slender petioles, serrate, slightly cordate, the lower ones roundish, 3 – 5-lobed, the upper ovate-lanceolate, entire or somewhat hastate, with rounded lobes; peduncles shorter than the petioles; calyx inflated; corolla tubular-campanulate, pale rose-color with a red centre; seeds silky. — River-banks in the upper districts, and westward. July and August. — Stems 3° – 4° high. Leaves 3′ – 5′ long. Corolla 2½′ long.

7. **H. coccineus,** Walt. Smooth; stem glaucous; leaves long-petioled, 5-parted to the base, the lobes lanceolate, remotely toothed, with long-tapering entire tips; corolla expanding, bright scarlet; petals long-clawed; seeds pubescent. (H. speciosus, *Ait.*) — Deep marshes near the coast, Florida, Georgia, and westward. July and August. — Stems 4° – 8° high. Leaves 6′ – 12′ long. Corolla 6′ – 8′ wide. Column of stamens naked below.

\+ + *Trees or shrubs: stipules persistent.*

8. **H. Floridanus,** Shuttl. Hispid; leaves small, ovate, obtuse, crenate-serrate, often cordate, and slightly 3-lobed; peduncles longer than the leaves; corolla tubular-campanulate, crimson; column of stamens exserted; seeds woolly. (Malvaviscus Floridanus, *Nutt.*) — South Florida. — Shrub 4° – 5° high, branching. Leaves ½′ – 1′ long. Stipules subulate. Flowers 1′ long.

9. **H. tiliaceus,** L. Leaves orbicular-cordate, acuminate, slightly crenate, hoary-tomentose beneath; stipules large, oblong, clasping; involucel 9 – 10-toothed; capsule tomentose; seeds smooth. — South Florida. — A large tree. Leaves 3′ – 4′ long. Flowers yellow?

H. ESCULENTUS, L. (H. Collinsianus, *Nutt.*?) is the garden OKRA.

H. SYRIACUS, L., the ALTHÆA, is everywhere cultivated.

To this family belongs the COTTON-PLANT (GOSSYPIUM, *L.*), the numerous varieties of which are now referred to two species, viz. the SHORT STAPLE or UPLAND (G. ALBUM, *Ham.*), and the LONG STAPLE or SEA ISLAND (G. NIGRUM, *Ham.*).

ORDER 23. BYTTNERIACEÆ. (BYTTNERIA FAMILY.)

Chiefly trees or shrubs differing from Malvaceæ in having definite stamens, of which those opposite the petals are usually sterile, 2-celled anthers, with smooth pollen-grains, and a straight embryo. — Ovary 3 – 5-celled, rarely 1-celled.

1. AYENIA, L.

Involucel none. Calyx 5-parted. Petals on long capillary claws, connivent over the stigma. Fertile stamens 5, alternating with 1 – 2 sterile ones, their filaments united into a pedicellate cup. Style single. Stigma 5-angled. Capsule 5-lobed, 5-celled, loculicidally 5-valved, the cells 1-seeded. — Low shrubby plants, with minute axillary flowers. Capsule rough. Albumen none.

1. **A. pusilla,** L. Stems mostly simple, prostrate, downy; leaves (4″ – 8″ long) roundish or oblong, coarsely serrate; peduncles solitary, reflexed in fruit; capsule depressed, muricate. — South Florida. ♃ — Stems 6′ – 12′ long. Flowers purple.

2. WALTHERIA, L.

Involucel 3-leaved, deciduous. Calyx 5-cleft. Petals 5, spatulate, convolute in the bud. Stamens 5, united below. Ovary 1-celled, 2-ovuled. Style single. Stigma penicillate or tuberculate. Capsule 2-valved, 1-seeded. Embryo in the axis of fleshy albumen. — Herbs or shrubs, with alternate leaves, and small flowers in axillary clusters.

1. **W. Americana,** L. Stem erect, villous; leaves ovate or oblong, acute or obtuse, serrate, plicate, tomentose on both surfaces; heads of flowers globose, stalked, or subsessile and shorter than the petioles, the upper ones often spiked; calyx hirsute; flowers yellow. — South Florida. — Stem 2° – 3° high, rigid. Leaves 1′ – 2′ long.

ORDER 24. TILIACEÆ. (LINDEN FAMILY.)

Trees, rarely herbs. Leaves alternate, with deciduous stipules. Flowers axillary or extra-axillary, hypogynous, polyandrous. Sepals 4 – 5, valvate in the bud, deciduous. Petals 4 – 5, convolute or imbricated in the bud. Stamens distinct or united in clusters: anthers 2-celled, the pollen grains smooth. Style single. Stigma 4 – 10-lobed. Capsule 2 – 5-celled, 1 – many-seeded. Seeds anatropous. Embryo in the axis of fleshy albumen. Cotyledons flat, leafy.

1. TILIA, Tourn. LINDEN. BASSWOOD.

Sepals 5. Petals 5, imbricated in the bud. Stamens numerous, united in 5 clusters, with a petal-like appendage (sterile stamen) opposite each petal. Ovary 5-celled, with 2 ovules in each cell. Stigma 5-lobed. Capsule 1-celled, 1 – 2-seeded. — Trees, with cordate leaves, and several-flowered axillary peduncles, which are connate below with a large ligulate veiny bract. Flowers cream-color.

1. **T. Americana,** L. Leaves smooth and green on both surfaces, obliquely cordate or truncate at the base, sharply serrate. — Mountains of Georgia and northward. June. — A large tree. Leaves 4′ – 5′ wide.

2. **T. pubescens,** Ait. Leaves hoary-tomentose on both surfaces, becoming smoothish above, obliquely truncate at the base, mucronate-serrate. — Rich soil, Florida to North Carolina, and westward. June. — Leaves 4′ – 5′ wide.

3. **T. heterophylla,** Vent. Leaves larger (6′ - 8′ wide), deep green above, white-tomentose beneath. — Mountains of North Carolina. — June and July.

2. CORCHORUS, L.

Sepals 5. Petals 5, convolute in the bud. Stamens mostly numerous, separate. Style slender. Stigma dilated, crenulate. Capsule mostly elongated, silique-like, loculicidally 2-valved, many-seeded. — Herbs or shrubby plants, with alternate serrate petioled leaves, and small yellow flowers on short peduncles opposite the leaves. Stipules deciduous.

1. **C. siliquosus,** L. Stem much branched, hairy in lines; leaves ovate and lanceolate, smooth; peduncles 1 - 2-flowered; stamens numerous; capsule linear, compressed, 2-celled, many-seeded. — Near Mobile, Alabama, and Key West. — Stems 1° - 2° high. Capsule 2′ long.

ORDER 25. CAMELLIACEÆ. (CAMELLIA FAMILY.)

Trees or shrubs, with alternate exstipulate leaves, and regular hypogynous polyandrous showy flowers. — Sepals and petals 5 - 6, imbricated in the bud. Stamens numerous, united at the base into a ring, or into sets placed opposite the petals, and adnate to their bases: anthers 2-celled, introrse. Ovary 2 - 5-celled, 2 - many-ovuled. Styles 2 - 5, distinct or united. Capsule 2 - 5-celled, mostly loculicidally dehiscent. Albumen scarce or none.

1. GORDONIA, Ellis. LOBLOLLY-BAY.

Sepals 5, roundish, concave. Petals 5, thick, obovate, united at the base. Stamens united into 5 sets. Ovary 5-celled, with 4 - 8 pendulous ovules in each cell. Styles united. Capsule loculicidally 5-valved, woody. Seeds angular or winged. Flowers axillary.

§ 1. GORDONIA proper. — *Stamens short, inserted into the fleshy 5-lobed cup which adheres to the base of the petals; capsule ovoid, 5-valved. — Leaves coriaceous, perennial. Flowers long-peduncled.*

1. **G. Lasianthus,** L. Sepals and petals silky; leaves obovate-oblong, narrowed into a petiole, finely serrate. — Swamps in the lower districts, Florida to North Carolina, and westward. July and August. — A tree 30° - 50° high. Flowers 2′ wide, white.

§ 2. FRANKLINIA. — *Stamens long, distinct, inserted into the base of the petals; capsule globose, loculicidally 5-valved above the middle, and septicidally 5-valved below. — Leaves deciduous.*

2. **G. pubescens,** L'Herit. Sepals and petals silky; leaves obovate-oblong, sharply serrate, white beneath; flowers short-peduncled. — Georgia and Florida, near the coast. — A small tree. Flowers 3′ wide, white.

2. STUARTIA, Catesb.

Sepals 5 – 6, silky, 1 – 2-bracted. Petals 5 – 6, obovate, crenulate, silky. Stamens united into a ring at the base, and adnate to the base of the petals. Ovary 5-celled, with two anatropous ovules in each cell. Styles 5, distinct or united. Capsule ovoid, woody, 5-valved; the cells 1 – 2-seeded. — Shrubs, with alternate leaves, and large white or cream-colored flowers on short axillary peduncles.

§ 1. STUARTIA. — *Styles united: capsule globose: seeds not margined.*

1. **S. Virginica,** Cav. Sepals 5, roundish; petals 5, round-obovate; leaves oval, thin, serrulate, finely pubescent. (S. Malachodendron, *L.*) — Shady woods, Florida to North Carolina, and westward. April and May. — Shrub 8° – 12° high. Flowers 2′ – 3′ wide. Stamens purple.

§ 2. MALACHODENDRON. — *Styles separate: capsule ovate, acuminate: seeds margined.*

2. **S. pentagyna,** L'Her. Sepals and petals 5 – 6, the latter obovate, with jagged edges; leaves oval, acute. — Mountains of Georgia and North Carolina. May – July. — Shrub similar to the preceding, the leaves and flowers rather larger, and longer stamens.

ORDER 26. OLACACEÆ. (XIMENIA FAMILY.)

Trees or shrubs, with alternate entire petioled and exstipulate leaves, and regular hypogynous perfect or polygamous flowers, in axillary racemes or corymbs. — Calyx truncate or 4 – 5-toothed, persistent. Petals 4 – 5, distinct or partly united, valvate in the bud. Stamens mostly twice as many as the petals, and inserted into their bases: anthers introrse. Ovary 1 – 4-celled. Ovules few, anatropous. Style single, filiform. Fruit drupaceous, often surrounded with the enlarged calyx, 1-celled, 1-seeded. Embryo straight in the axis of fleshy albumen.

1. XIMENIA, Plum.

Calyx small, 4-toothed. Petals 4, united at the base, villous within. Stamens 8. Ovary 4-celled, the cells 3 – 4-ovuled. Drupe baccate; not enclosed in the calyx. — Thorny trees or shrubs. Leaves coriaceous. Flowers axillary, single or corymbose.

1. **X. Americana,** L. Smooth; leaves 2 – 3 together, oblong, obtuse, short-petioled; peduncles 2 – 4-flowered, shorter than the leaves; petals thick, lanceolate, spreading above, rusty-hairy within. — Key West. — Thorns stout, ½′ long. Leaves 2′ long. Flowers small, yellow. Drupe yellow, roundish, as large as a plum. Nut white, globose.

ORDER 27. AURANTIACEÆ. (ORANGE FAMILY.)

The ORANGE, LEMON, and LIME (species of CITRUS, *L.*) are commonly cultivated in the warmer parts of the Southern States, and the

BITTER-SWEET ORANGE (C. VULGARIS, *Risso*) is completely naturalized in some portions of South Florida.

The PRIDE OF INDIA, or CHINA-TREE (MELIA AZEDERACH, *L.*) belongs to the allied Order MELIACEÆ.

ORDER 28. CEDRELACEÆ. (MAHOGANY FAMILY.)

Lofty trees, with hard and colored wood, pinnate exstipulate leaves, and regular hypogynous panicled flowers. — Sepals 3 – 5, often more or less united. Petals 3 – 5, convolute in the bud. Stamens twice as many as the petals, distinct or united into a tube, and inserted with the petals into an hypogynous disk. Ovary 3 – 5-celled, with few or many ovules in each cell. Style single. Capsule woody, 3 – 5-celled, 3 – 5-valved, the valves at length separating from the thick angular or winged axis. Seed anatropous, winged. Albumen fleshy or none. Cotyledons leafy.

1. SWIETENIA, L. MAHOGANY.

Calyx 5-cleft. Petals 5. Stamens 10, united into a 10-toothed tube, which encloses the 10 anthers. Style short. Stigma 5-rayed. Capsule 5-celled, 5-valved, with the numerous suspended seeds imbricated in two rows. — A large tree, with hard reddish-brown wood. Leaves alternate, abruptly pinnate. Leaflets 6 – 10, opposite, entire, ovate-lanceolate, unequal at the base. Flowers greenish-yellow, in axillary panicles. Capsule ovate, as large as an Orange.

1. **S. Mahogoni,** L. South Florida.

ORDER 29. LINACEÆ. (FLAX FAMILY.)

Chiefly herbs, with entire exstipulate leaves, and regular hypogynous racemose or panicled flowers. — Sepals 4 – 5, imbricated in the bud, persistent. Petals 4 – 5, convolute in the bud, deciduous. Stamens 4 – 5, united at the base. Styles 4 – 5, rarely united. Capsule globose, splitting into five 2-seeded carpels, which are more or less perfectly 2-celled and 2-valved. Seeds anatropous, suspended. Cotyledons flat.

1. LINUM, L. FLAX.

Sepals, petals, stamens, and styles 5. Capsule partly or completely 10-celled, the cells 1-seeded; seeds compressed, oily. — Stems slender. Leaves narrow and mostly alternate. Peduncle 1-flowered, borne above or opposite the leaves.

1. **L. Virginianum,** L. (WILD FLAX.) Leaves lanceolate, acute, the lower ones opposite and obtuse; flowers scattered in corymbose racemes; sepals smooth, ovate, acute; styles distinct; capsule depressed-globose, 10-celled. — Varies with glandular sepals, larger globose-ovate capsules, and linear leaves. — Sterile soil, Florida and northward. July. ♃ — Stem slender, often much branched, 2° high. Flowers yellow.

2. **L. Boottii,** Planchon. Leaves linear, acute; flowers scattered in cymose racemes; sepals ovate-lanceolate, 3-nerved, fringed with glandular hairs; styles united below the middle; capsule imperfectly 10-celled, globose. — Dry soil, North Carolina and northward. July. — Stems 1° – 2° high. Flowers larger than in No. 1, sulphur-yellow.

3. **L. striatum,** Walt. "Flowers terminal; leaves subovate, alternate, the nerve and margins decurrent on the stem; stem branched, striate." — South Carolina, *Walter*. (*)

ORDER 30. OXALIDACEÆ. (WOOD-SORREL FAMILY.)

Chiefly herbs, with sour juice, alternate compound leaves, and regular hypogynous decandrous flowers. — Sepals 5, imbricated in the bud, persistent. Petals 5, convolute in the bud, deciduous. Stamens more or less united. Styles 5, distinct. Ovary 5-celled. Capsule 5-celled, the cells few-seeded. Seeds anatropous, pendulous. Embryo straight in the axis of fleshy albumen. Cotyledons flat.

1. OXALIS, L. WOOD-SORREL.

Capsule 5-lobed; the cells loculicidally dehiscent on the back, 1 – few-seeded. Seed-coat loose and separating. — Leaves 3-foliolate. Leaflets obcordate.

1. **O. violacea,** L. (PURPLE WOOD-SORREL.) Stemless; root tuberous; scapes umbellately 4 – 6-flowered; flowers purple, nodding. — Rich woods, West Florida to North Carolina, and westward. May and June. — Scapes and petioles 5′ – 9′ high.

2. **O. Acetocella,** L. (WHITE WOOD-SORREL.) Stemless; root creeping; scape 1-flowered; flower white, veined with red. — Mountains of North Carolina and northward. June. — Scape and petioles hairy, 2′ – 5′ high.

3. **O. stricta,** L. (YELLOW WOOD-SORREL.) Stems branching, leafy; peduncles axillary, 2 – 6-flowered, longer than the leaves; flowers yellow; capsule elongated, erect. — Dry soil, common and varying greatly. April – December. ☉ and ♃ — O. recurva and O. furcata, *Ell.*, and O. Lyoni, *Ph.*, are forms of this.

ORDER 31. ZYGOPHYLLACEÆ. (BEAN-CAPER FAMILY.)

Herbs, shrubs, or trees, with hard wood, opposite pinnate dotless stipulate leaves, and regular hypogynous mostly decandrous flowers. — Sepals and petals 5 – 6, imbricated or convolute in the bud. Stamens distinct, often appendaged. Ovary 2 – 12-celled, with the styles united. Capsule composed of 2 – 12 indehiscent carpels, which separate from each other and often from a central axis at maturity. Embryo straight. Cotyledons flat. Radicle superior.

Synopsis.

1. TRIBULUS. Carpels 5, transversely few-celled, few-seeded. Herbs.
2. KALLSTRÖMIA. Carpels 10, 1-celled, 1-seeded. Herbs.
3. GUAIACUM. Carpels 2–5, compressed, 1-seeded. Trees.

1. TRIBULUS, L.

Sepals 5, imbricated in the bud, deciduous. Stamens 10. Ovary 5-celled, with 3–5 suspended ovules in each cell. Carpels of the fruit 5, spiny on the back, transversely divided into 2–5 one-seeded cells, separating at maturity, without a central axis. Albumen none. — Prostrate herbs. Leaves abruptly pinnate. Peduncles solitary, 1-flowered.

1. **T. cistoides,** L. Leaves unequal; leaflets 6–16, linear-oblong, mucronate, silky beneath; peduncles as long as the leaves; flowers large, yellow. — Key West. — Stems 1°–2° long, hairy. Petals 2–3 times as long as the calyx.

2. KALLSTRÖMIA, Scop.

Sepals 5–6, persistent, imbricated in the bud. Stamens 10–12. Ovary 10–12-celled, the cells 1-ovuled. Carpels of the fruit 10–12, separating from each other and from the central axis. Albumen none. — Hairy herbs, with the habit of TRIBULUS.

1. **K. maxima,** Torr. & Gray. Leaves nearly equal; leaflets 6–8, obliquely oblong, mucronate, the terminal pair larger; peduncles shorter than the leaves; petals as long as the bristly calyx, yellow; carpels rugose on the back. — Key West and Savannah. — Stems 1°–2° long.

3. GUAIACUM, Plum.

Sepals 5, deciduous. Stamens 10, with naked filaments. Ovary stalked, 2–5-celled; the cells 8–10-ovuled. Carpels of the fruit 2–5, compressed, 1-seeded. Seed-coat fleshy. Embryo straight in hard thin albumen. — Trees. Leaflets reticulate. Flowers blue or purple.

1. **G. sanctum,** L. Branches opposite and forking, jointed, pubescent when young; leaflets 6 or 8, obliquely obovate or oblong, mucronate, entire; peduncles single or clustered at the forks of the branches, 1-flowered, shorter than the leaves; sepals and petals obtuse; flowers blue. — South Florida. — A small tree with white bark. Flowers ½′ wide. Fruit obovate.

ORDER 32. GERANIACEÆ. (GERANIUM FAMILY.)

Herbs or shrubby plants, with tumid joints, alternate or opposite palmately lobed stipulate leaves, and hypogynous and decandrous flowers. — Sepals 5, imbricated in the bud, persistent. Petals 5, convolute in the bud, deciduous. Stamens monadelphous at the base; the 5 exterior ones shorter and often sterile. Ovaries 5, 2-ovuled, and, with the persistent

styles, adnate to an elongated central axis, from which they separate elastically at maturity. Seed solitary, without albumen. Embryo convolute.

1. GERANIUM, Tourn. CRANESBILL.

Flowers regular. Stamens perfect, the inner ones with a gland at the base. Styles at maturity separating with the 1-seeded carpels, and coiled upward, the inner face naked. — Herbs. Stems forking. Leaves palmately lobed. Peduncles 1 – 3-flowered.

1. **G. maculatum,** L. Perennial, erect, hairy; leaves 5 – 7-parted, the divisions acutely lobed and toothed; peduncles 1 – 2-flowered, the terminal ones often umbellate; petals large, entire, 2 – 3 times longer than the oblong awned sepals. — Open woods in the upper districts and northward. April and May. — Root tuberous, very astringent. Stem 1° – 2° high. Flowers purple, 1′ wide.

2. **G. Carolinianum,** L. Annual, generally prostrate, pubescent; leaves 5 – 7-parted, the narrow divisions obtusely lobed and toothed; peduncles 2-flowered; petals emarginate, as long as the ovate awned sepals. — Waste places, common. March and April. — Stems forking, 6′ – 18′ long. Flowers pale purple.

ORDER 33. BALSAMINACEÆ. (BALSAM FAMILY.)

Smooth and succulent annual herbs, with undivided exstipulate leaves, and irregular hypogynous pentandrous flowers. — Sepals 5, colored, deciduous; the two inner (and upper) ones united, the lowest large and saccate. Petals 4 – 5, distinct or united. Stamens 5, coherent above. Ovary 5-celled, the cells 2 – several-ovuled. Fruit capsular or drupaceous. Seeds anatropous, without albumen. Embryo straight, with thick cotyledons.

1. IMPATIENS, L. JEWEL-WEED.

Lowest sepal saccate and spurred. Petals 4, united by pairs. Filaments short, with a scale on the inner face. Capsule 5-celled, bursting elastically into 5 valves. Placentæ central, persistent. — Stems branching, somewhat pellucid. — Leaves serrate. Peduncles axillary, 1 – several-flowered. Earliest flowers fruiting in the bud.

1. **I. pallida,** Nutt. (PALE TOUCH-ME-NOT.) Leaves ovate or oval, obtusely serrate, membranaceous; flowers pale yellow; lower sepal slightly spotted, dilated, open, tipped with a short recurved spur. — Wet shady places, Georgia and northward. July – Sept. — Stems 2° – 4° high.

2. **I. fulva,** Nutt. (SPOTTED TOUCH-ME-NOT.) Flowers deep orange; lower sepal conical, conspicuously spotted, tipped with a rather long recurved spur; otherwise like No. 1, but with smaller flowers. — Shady swamps, Florida and northward. July – Sept.

Order 34. RUTACEÆ. (Rue Family.)

Herbs, shrubs, or trees, with exstipulate simple or compound dotted leaves, and regular hypogynous perfect or unisexual flowers. — Sepals and petals 3 – 5. Stamens as many or twice as many as the sepals. Ovaries 2 – 5, distinct or united, stipitate or sessile on a glandular disk. Styles mostly united. Fruit commonly composed of separate 1-celled 2-valved carpels. Embryo straight or curved, mostly in fleshy albumen.

1. ZANTHOXYLUM, L. Prickly Ash.

Flowers monœcious or dicœcious. Sepals and petals 3 – 5. Stamens 3 – 5. Ovaries 2 – 5, sessile or stipitate, 2-ovuled. Carpels 2-valved, 1 – 2-seeded. Seed smooth and shining. — Trees or shrubs, commonly armed with stipular prickles. Leaves unequally pinnate, the leaflets punctate with pellucid dots. Flowers small, greenish.

1. **Z. Carolinianum,** Lam. (Toothache-Tree.) Smooth; branches and commonly the petioles armed with long prickles; leaves alternate, 7 – 9-foliolate; leaflets ovate-lanceolate, crenate-serrulate, unequal-sided, shining above; panicles terminal; stamens 5; carpels 3, nearly sessile. — Var. fruticosum, Gray. Shrubby; leaves shorter, ovate or oblong, more strongly crenate; ovaries always two. — Dry soil near the coast, Florida to North Carolina, and westward. June. — A small tree, with the pungent bark armed with warty prickles.

2. **Z. Floridanum,** Nutt. (Satin-Wood.) Branches and petioles unarmed; leaflets 5 – 7, ovate-lanceolate on the fertile plant, and elliptical, obtuse or emarginate on the sterile, slightly crenulate, and like the cymose panicle stellate-pubescent; stamens 4 – 5; carpels 1 – 2, obovate, stipitate; seed solitary, obovate, black and shining. — South Florida. — Leaves 1′ – 2′ long. Cyme sessile, divided into three primary branches. Flowers minute.

3. **Z. Pterota,** H. B. & K. Smooth; branches zigzag, armed with short curved prickles; petiole winged, jointed; leaflets 7 – 9, small, obovate, coriaceous, crenate above the middle, sessile; flowers in axillary clusters, which are single or by pairs, as long as the first joint of the petiole; stamens 4; ovaries 2; carpels solitary, globose, pitted, distinctly stipitate. — South Florida. — Leaflets ½′ – ¾′ long, those on the fertile plant narrower and smaller. Carpels small, dotted.

2. PTELEA, L. Hop-tree.

Flowers polygamous. Sepals and petals 4 – 5, imbricated in the bud, deciduous. Stamens 4 – 5. Ovary 2-celled, with two ovules in each cell. Style short. Stigma 2-lobed. Capsule 2-celled, 2-seeded, surrounded by a broad circular reticulated wing. — Unarmed shrubs, with trifoliolate leaves, and small greenish flowers in a terminal cyme.

1. **P. trifoliata,** L. Pubescent; leaves long-petioled; leaflets oval or oblong, mostly acute, obscurely crenulate, paler beneath, the lateral ones unequal-

sided; filaments 4 – 5, densely villous below the middle, longer than the style in the sterile flowers, shorter in fertile ones. — Rocky banks, Florida and northward. May and June. — Shrub 4° – 8° high. Leaflets 2′ – 4′ long. Fruit 1′ wide.

2. **P. mollis,** M. A. Curtis. "Lateral leaflets oval, the terminal obovate, with an abrupt acute point, the under side, with the petioles, panicles, and young branches, clothed with a soft whitish silky villus; cymes compact, with short branches; style long; filaments equalling the anthers." — Low country of North and South Carolina (*Curtis*). — Leaves smaller and more rigid than in No. 1, the style twice as long. Stamens 4.

3. **P. Baldwinii,** Torr. & Gray. Leaves very small, glabrous; leaflets sessile, oval, obtuse, the terminal one cuneiform at the base; flowers tetrandrous; style none. — East Florida. — Shrub 1° high, with numerous short and scraggy branches. Leaflets 1′ long. Flowers smaller than in No. 1.

Order 35. SIMARUBACEÆ. (Quassia Family.)

Trees or shrubs, with bitter milky juice, pinnate exstipulate alternate and dotless leaves, and regular hypogynous perfect or polygamous flowers. — Calyx 4 – 5-parted or 4 – 5-toothed, persistent. Petals 4 – 5, deciduous. Stamens as many or twice as many as the petals, inserted on a hypogynous disk. Ovary composed of 4 – 5 distinct or united carpels, with a solitary anatropous suspended ovule in each. Fruit drupaceous, 1-seeded. Seeds with a membranaceous coat. Albumen none. Radicle superior, included in the cotyledons.

1. SIMARUBA, Aublet. Quassia.

Flowers monœcious or diœcious. Calyx 4 – 5-toothed. Petals 4 – 5, spreading. Stamens 8 – 10, with the filaments inserted on the back of a ciliate scale. Ovaries 4 – 5, surrounded by 8 – 10 scale-like rudiments of stamens. Styles connivent; the stigmas spreading. Drupes 1 – 5. — Trees. Leaves abruptly pinnate, with alternate and entire leaflets. Flowers small, greenish, in lateral and terminal panicles.

1. **S. glauca,** DC. Smooth throughout; flowers diœcious; stigmas 5, subulate, spreading; leaflets 4 – 8, alternate and opposite, coriaceous, obovate or oblong, obtuse, paler beneath; drupe oval, mostly solitary. — South Florida. — A large tree.

Order 36. BURSERACEÆ. (Torch-Wood Family.)

Trees or shrubs, with resinous juice, unequally pinnate or trifoliolate commonly dotted leaves, and small regular flowers in axillary or terminal racemes or panicles. — Calyx free from the 1 – 5-celled sessile ovary, 2 – 5-lobed, persistent. Petals 2 – 5, alternate with the calyx-lobes, and

inserted under an orbicular or annular disk at the bottom of the calyx, mostly valvate in the bud. Stamens twice as many as the petals, and inserted with them: anthers introrse. Ovules anatropous, pendulous, mostly two in each cell. Stigmas 1 – 5. Fruit drupaceous, dry; the pericarp often splitting into valves. Albumen none. Radicle superior.

1. BURSERA, Jacquin.

Flowers polygamous. *Sterile Fl.* Calyx 3 – 5-parted. Petals 3 – 5, valvate in the bud. Stamens 6 – 10. Disk crenulate. *Fertile Fl.* Calyx 3-parted. Petals 3. Stamens 6. Ovary ovate, 3-celled. Style short: stigma 3-lobed. Drupe oblong, 1-seeded; the pericarp 3-valved. Cotyledons wrinkled.

1. **B. gummifera,** Jacquin. Leaves alternate, 3 – 9-foliolate, long-petioled, deciduous; leaflets stalked, opposite, ovate, acuminate, entire, rounded or slightly cordate at the base, at length smooth on both sides; flowers small, whitish, in axillary racemes; drupe purplish. — South Florida. — A large tree.

2. AMYRIS, L. Torch-Wood.

Flowers perfect. Calyx 4-parted. Petals 4, narrowed at the base, imbricated in the bud. Stamens 8, shorter than the petals, hypogynous. Ovary 1-celled. Stigma capitate. Drupe globose, 1-seeded. Cotyledons plano-convex. — Trees or shrubs. Leaves 3 – 7-foliolate, opposite, with glandular pellucid dots. Flowers panicled, white.

1. **A. Floridana,** Nutt. Smooth; leaves petioled, trifoliolate; leaflets ovate, obtuse, entire, on slender stalks; branches of the panicle opposite; drupe, like the flowers, dotted. — South Florida. — A shrub or small tree. Leaves 1′ – 1¼′ long, shining above. Flowers yellowish-white.

Order 37. ANACARDIACEÆ. (Cashew Family.)

Trees or shrubs, with milky or resinous juice, alternate exstipulate dotless leaves, and perfect or polygamous regular flowers. — Sepals and petals 4 – 5, imbricated in the bud. Stamens as many as the petals, or twice as many, and inserted with them into the base of the calyx. Ovary solitary, with a single ovule ascending from the base of the cell. Style simple or 3-cleft. Fruit drupaceous. Seeds without albumen. Radicle curved.

1. RHUS, L. Sumach.

Calyx 5-parted. Petals 5, inserted with the 5 stamens on the disk which surrounds the base of the ovary. Stigmas 3. Drupe dry. Radicle superior, incurved. — Shrubs or small trees. Leaves pinnate or trifoliolate, rarely simple. Flowers small, greenish, in spikes or panicles.

* *Flowers polygamous, in a close terminal panicle: drupe red, hairy: leaves pinnate. (Not poisonous.)*

1. **R. typhina,** L. Branches, petioles, and drupes villous; leaflets 17 – 21, lanceolate, acuminate, serrate, smooth, pale beneath. — Dry hill-sides, Mississippi to North Carolina, and northward. June and July. — A shrub or small tree.

2. **R. glabra,** L. Smooth and glaucous; leaflets 17 – 31, oblong-lanceolate, serrate, acuminate, white beneath. — Open woods in dry rich soil, West Florida to Mississippi, and northward. July. — A shrub 6° – 10° high. Petioles terete.

3. **R. copallina,** L. (SUMACH.) Branches and wing-margined petioles tomentose; leaflets 9 – 21, lanceolate or ovate-lanceolate, acute or obtuse, mostly entire, smooth above, paler and downy beneath; panicle often large and spreading. — Margins of fields and open woods, Florida to Mississippi, and northward. July and August. — A shrub or small tree.

4. **R. pumila,** Michx. Low, procumbent; branches and petioles tomentose; leaflets 11 – 13, oval or oblong, acute, coarsely serrate, pale and tomentose beneath. — Pine barrens, Georgia to North Carolina. — Branches 1° high.

* * *Flowers diœcious, in loose axillary panicles: drupe whitish, smooth: leaves pinnate and trifoliolate. — (Juice poisonous.)*

5. **R. venenata,** DC. (POISON ELDER.) Smooth; leaves pinnate; leaflets 7 – 13, ovate or oblong, abruptly acute or acuminate, entire; panicles long-peduncled, narrow, erect. (R. Vernix, *L.*) — Swamps, Florida to Mississippi, and northward. July. — A shrub 8° – 12° high.

6. **R. Toxicodendron,** L. (POISON OAK. POISON IVY.) Branches and petioles smooth; leaves trifoliolate; leaflets ovate or oblong-ovate; panicle small, spreading.

Var. 1. **quercifolium,** Michx. Stems low, erect; leaflets mostly variously lobed. — Dry pine barrens.

Var. 2. **radicans,** Torr. Stems climbing by rootlets; leaflets toothed or entire, rarely lobed, more or less pubescent. — Swamps, Florida to Mississippi, and northward. July.

* * * *Flowers diœcious, in loose panicles: drupe oblong, smooth, scarlet: nut chartaceous: seeds arillate: leaves pinnate.*

7. **R. Metopium,** L. Smooth; leaflets 3 – 7, coriaceous, long-stalked, ovate or elliptical, acuminate, entire; panicle narrow, as long as the leaves; calyx-lobes yellowish-white; petals and stamens 5. — South Florida. — A tree 15° – 20° high.

* * * * *Flowers diœcious, in short bracted spikes, appearing with the leaves: drupe red, hairy: leaves trifoliolate.*

8. **R. aromatica,** Ait. Stem low, smooth; leaflets ovate, or the terminal one obovate, obtuse, pubescent when young, toothed above the middle; spikes single or clustered, spreading. — Dry open woods, West Florida to Mississippi, and northward. March and April. — Shrub 1° – 2° high. Spikes 1′ long. — Plant aromatic, not poisonous.

* * * * * *Flowers perfect, in an open panicle, the pedicels mostly abortive, elongating, and plumose: drupe smooth.*

9. **R. cotinoides,** Nutt. Smooth; leaves simple, membranaceous, oval, obtuse, entire, acute at the base, the upper ones long-petioled; panicle nearly sessile, narrow, with erect branches; flowers minute. — Interior of Alabama, *Buckley.* Leaves, with the petiole, 3′ – 4′ long.

Order 38. VITACEÆ. (Vine Family.)

Climbing shrubs, with watery juice, opposite stipulate leaves, and small greenish flowers in panicled clusters opposite the leaves. — Calyx minute, truncated. Petals 4 – 5, hypogynous or perigynous, valvate in the bud, deciduous. Stamens 4 – 5, opposite the petals: anthers introrse. Ovary 2-celled, with 2 erect collateral ovules in each cell. Style short or none: stigma slightly 2-lobed. Berry 1 – 4-seeded. Seeds anatropous, bony. Embryo minute at the base of hard or fleshy albumen. Radicle inferior. — Leaves simple or compound. Tendrils opposite the leaves. Flowers perfect or polygamous.

1. VITIS, L. Vine. Grape.

Petals distinct, or remaining united at the apex and separating at the base, inserted into a 4 – 5-lobed or cup-shaped disk which surrounds the ovary.

§ 1. Cissus. — *Flowers perfect: petals and stamens* 4 – 5: *style conspicuous: stigma minute: leaves simple or compound.*

1. **V. bipinnata,** Torr. & Gray. Leaves bipinnate, smoothish; leaflets small, ovate, sharply toothed; flowers somewhat cymose, on a long forking peduncle; petals 4 – 5, united at the apex, separating at the base; style conical; disk 4 – 5-lobed; berry 2 – 4-seeded. (Ampelopsis bipinnata, *Michx.*) — Margins of swamps, Florida and northward. June and July. — Tendrils none. Leaflets 1′ long. Berry small, black.

2. **V. acida,** L. Branches geniculate; leaves trifoliolate, thick and rigid; leaflets small, cuneate-obovate, sharply toothed at the apex; flowers in compound umbels; petals 4, united at the apex, separating at the base; style slender; disk cup-shaped, entire; berry black, 1-seeded. — Key West. — Tendrils stout and elongated. Leaflets ½′ long. Branchlets and peduncles flattened and elongated. Leaves and parts of the panicle separating in drying, as also in the next species.

3. **V. incisa,** Nutt. Smooth; stem climbing, warty; leaves trifoliolate, very thick and fleshy; leaflets stalked, wedge-shaped and entire near the base, the lateral ones 2-lobed, the middle 3-lobed, all mucronate-toothed or serrate; berry (purple) globose-ovate, nodding, pointed with the conspicuous slender style, 1-seeded. — Sandy shores of St. Vincent's Island, West Florida and westward. Fruiting in November. — Stem 6° – 12° long. Leaflets 1′ – 3′ long. Panicles cymose. Berry 5″ – 6″ long. Flowers not seen.

4. **V. indivisa,** Willd. Leaves simple, undivided, ovate, truncate, or cordate at the base, acuminate, toothed-serrate, pubescent; peduncles forking; petals and stamens 5; style slender; disk cup-shaped; berry 1–3-seeded. — Banks of rivers, Florida to North Carolina, and westward. June. — Stem climbing high. Berry small, black.

§ 2. VITIS. — *Flowers polygamous: petals* 5, *cohering at the top, free at the base: stamens* 5: *style short: disk thick,* 5-*lobed: leaves simple, cordate, entire or variously lobed.*

* *Leaves and branches woolly.*

5. **V. Labrusca,** L. (FOX-GRAPE.) Leaves broadly cordate, angularly 3–5-lobed, mucronate-serrate, very woolly when young, at length smoothish above; fertile panicles or racemes few-flowered; berry large. — River-swamps, Mississippi to North Carolina, and northward. May and June. — Leaves 4′–6′ wide. Berry ½′ in diameter, purple or whitish, pleasant-flavored.

6. **V. Caribæa,** DC. Leaves round-cordate, with a broad and shallow sinus, entire or 3-lobed, wavy-serrate, acute or acuminate, soon smooth above, the lower surface, like the branches, petioles, and panicles, clothed with soft ash-colored down; panicles equalling or longer than the leaves; pedicels smooth. (V. coriacea, *Shuttl.*? a form with smaller and more rigid leaves.) — South Florida. Berry ½′ in diameter.

7. **V. æstivalis,** Michx. (SUMMER GRAPE.) Leaves broadly cordate, entire or 3–5-lobed, or on young plants pinnatifid, mucronate-serrate, covered with a loose cobwebby down, at length smooth or nearly so on both sides; panicles long, many-flowered; berry small. — Rich woods, Florida to Mississippi, and northward. June. — Stem climbing high. Leaves 4′–7′ wide. Panicle 6′–12′ long, compound. Berry deep blue, very austere.

* * *Leaves and branches smoothish.*

8. **V. cordifolia,** Michx. (FROST GRAPE.) Leaves thin, broadly cordate, entire or slightly 3-lobed, mucronate-serrate; pubescence, when present, soon vanishing; panicles compound, many-flowered; berry small. — River-swamps, Florida to Mississippi, and northward. May and June. — Leaves 3′–6′ wide. Berry almost black, very acid. — A form with broader incisely lobed and toothed leaves is V. riparia, *Michx.*

9. **V. vulpina,** L. (MUSCADINE. BULLACE.) Leaves broadly cordate, toothed-serrate, smooth and glossy on both sides, or rarely, like the branches, pubescent, the sinus at the base broad and rounded, or narrow and acute; panicle small; berry large. (V. rotundifolia, *Michx.*) — Banks of rivers, Florida to North Carolina, and westward. June. — Stem climbing high, with pale and smooth bark. Leaves 2′–3′ wide. Berry ½′–¾′ in diameter, purple, pleasant-flavored. — A form with smaller leaves and berries, the latter very austere, is sometimes called the MUSTANG GRAPE.

2. AMPELOPSIS, Michx.

Petals distinct, spreading, concave. Disk none. — Leaves digitate. Flowers clustered, in corymbose panicles.

1. **A. quinquefolia,** Michx. (VIRGINIAN CREEPER.) — Low grounds, Florida and northward. June. — Stem climbing by lateral tendrils. Leaflets 5, oblong-obovate, serrate above the middle, smooth. Berry small, dark-blue.

ORDER 39. RHAMNACEÆ. (BUCKTHORN FAMILY.)

Trees or shrubs, with simple mostly stipulate leaves, and small regular perigynous greenish or whitish flowers. — Sepals 4 – 5, united below, valvate in the bud. Petals alternate with the sepals, concave or hooded, sometimes wanting. Stamens opposite the petals, and inserted with them into the margin of a fleshy disk, which lines the base of the calyx. Ovary 1 – 4-celled, with a solitary erect anatropous ovule in each cell. Style single. Fruit drupaceous. Embryo large, in the axis of scanty fleshy albumen. Radicle inferior.

Synopsis.

* Drupe baccate, 1 - 2-celled. Ovary immersed in the disk.

1. SCUTIA. Petals 5, or none. Drupe 1-celled. Calyx adnate to the base of the ovary.
2. BERCHEMIA. Petals 5. Drupe 2-celled. Calyx free.

* * Drupe baccate, separating into 2 - 4 nutlets.

3. SAGERETIA. Leaves opposite. Nutlets 3. Flowers spiked.
4. RHAMNUS. Leaves alternate. Seed furrowed on the back. Flowers clustered.
5. FRANGULA. Leaves alternate. Seed not furrowed. Flowers umbelled.

* * * Drupe at length dry, separating into 3 nutlets.

6. CEANOTHUS. Flowers corymbed. Calyx white. Nutlets 2-valved.
7. COLUBRINA. Flowers cymose. Calyx green. Nutlets opening at the inner angle.
8. GOUANIA. Flowers spiked. Woody vines.

SCUTIA, Commers.

Calyx-tube hemispherical or pitcher-shaped, with 5 acute lobes. Petals 5, inserted into the margin of the disk, short-clawed, sometimes wanting. Ovary adhering to the disk below, 2 – 3-celled, with a single erect ovule in each cell. Style single, conical. Stigma 2 – 3-lobed. Fruit 1-celled, or separating into 2 – 3 one-seeded nutlets. Seeds without albumen. Radicle very short. — Shrubs, with alternate or opposite coriaceous entire 2-stipulate leaves, and small axillary flowers in simple umbels.

1. **S. ferrea,** Brongn. Spineless; mature leaves coriaceous, opposite or alternate, elliptical or obovate, emarginate, obtuse at the base, short-petioled; stipules by pairs, ovate, minute; flowers clustered, axillary, on short pedicels; calyx-tube 5-angled, the lobes ovate; ovary immersed in the thick 5-lobed disk, 2-celled, with an ascending ovule in each cell; style very short; stigmas 2, thick, erect; drupe 1-celled, 1-seeded. (Rhamnus ferreus, *Vahl.* Zizyphus emarginatus, *Swartz.*) — South Florida. — Branches opposite, whitish. Leaves pale, 1′ long.

2. BERCHEMIA, Neck. SUPPLE-JACK.

Calyx 5-cleft, the tube hemispherical. Petals 5, sessile, concave, as long as the calyx. Ovary free, 2-celled, half immersed in the fleshy disk. Styles united. Stigmas 2. Drupe oblong, 2-celled, 2-seeded. — Erect or twining shrubs, with alternate pinnately-veined leaves, with minute stipules, and small greenish axillary or panicled flowers.

1. **B. volubilis,** DC. Stem twining; leaves oblong, acute, wavy on the margins, glossy above, the simple veins oblique; flowers in small terminal panicles; drupe purple. (Zizyphus volubilis, *Willd.*) — Swamps, Florida to North Carolina, and westward. June.

3. SAGERETIA, Brongn.

Calyx 5-cleft, the tube hemispherical, the lobes carinate within. Petals obovate, shorter than the calyx, concave. Ovary free, 3-celled. Stigmas 3, nearly sessile. Drupe baccate, composed of three even 1-seeded indehiscent nutlets. Seeds not grooved. Cotyledons flat. — Slender trailing shrubs, with opposite branches and leaves, and minute whitish spiked flowers.

1. **S. Michauxii,** Brongn. Stem vine-like (6° – 18° long), with spine-like spreading branches; leaves (1′ long) nearly sessile, ovate or oblong-ovate, acute, finely serrate, smooth and shining, persistent; spikes slender, interrupted, mostly panicled; petals minute; drupe dark-purple, globose. (Rhamnus minutiflorus, *Michx.*) — Dry sandy soil along the coast, Florida to North Carolina. September. — Drupes pleasantly acid.

4. RHAMNUS, Tourn. BUCKTHORN.

Calyx 4 – 5-cleft, the tube urceolate, lined with a thin disk. Petals small, obovate, concave, often wanting. Ovary free, 2 – 4-celled. Styles united below. Stigmas 2 – 4. Drupe baccate, composed of 2 – 4 somewhat dehiscent nutlets. Seeds grooved on the back. Raphe dorsal. Cotyledons leafy, revolute. — Shrubs, with alternate stipulate finely veined leaves, and small axillary clustered polygamous or dicecious greenish flowers.

1. **R. lanceolatus,** Pursh. Leaves oblong-lanceolate, acute, or those of the flowering branches oblong and obtuse, serrulate; flowers clustered, on short pedicels, with long styles, or the more fruitful ones scattered on longer pedicels, and with short styles; petals emarginate; drupe 2-seeded. — Hills and river-banks, in the upper districts, Alabama and northward. June. — A tall shrub. Drupes black, as large as a grain of pepper.

5. FRANGULA, Tourn.

Seeds not grooved. Raphe lateral. — Leaves strongly parallel-veined. Flowers perfect. Otherwise as in Rhamnus.

1. **F. Caroliniana,** Gray. (CAROLINA BUCKTHORN.) Leaves oblong, wavy and finely serrulate on the margins, the slender petioles and many-flowered short-stalked umbels pubescent; petals 5, minute; stigmas 3; drupe globose,

3-seeded. (Rhamnus Carolinianus, *Walt.*) — Banks of rivers, Florida to North Carolina and westward. June. — A shrub or small tree. Leaves 3′ – 4′ long.

6. CEANOTHUS, L. Jersey Tea.

Calyx colored, 5-cleft, with the tube adnate to the ovary and persistent, the lobes connivent, deciduous. Petals 5, longer than the calyx, hooded, long-clawed. Stamens exserted. Style 3-parted. Drupe dry, composed of three 2-valved 1-seeded nutlets. Embryo in fleshy albumen. Cotyledons flat. — Shrubby plants, with alternate serrulate minutely stipulate 3-ribbed leaves, and small flowers in lateral and terminal corymbs or panicles.

1. **C. Americanus,** L. Branches pubescent; leaves deciduous, variable in size, ovate or ovate-lanceolate, acute or obtuse, sharply serrate, more or less pubescent, petioled; peduncles elongated, mostly 2-leaved above. — Dry woods, Florida to Mississippi, and northward. July. — Plant shrubby, 1° – 2° high. Leaves 3-ribbed, varying from ¾′ (C. intermedius, *Ell.*) to 3′ long, often nearly smooth (C. herbaceus, *Raf.*). Flowers and pedicels white.

2. **C. microphyllus,** Michx. Stem erect, diffusely much-branched; leaves perennial, small, obovate, slightly crenate, 3-ribbed, glossy above, with scattered hairs beneath; those in the axils clustered; corymbs small, terminal. — Dry barrens, Florida and Georgia, and westward. April and May. — Shrub 1° – 2° high, yellowish. Leaves 2″ – 3″ long. Pedicels and flowers white. Drupe black.

3. **C. serpyllifolius,** Nutt. Decumbent, diffusely branched; branches filiform; leaves very small, ovate-elliptical, serrulate, obtuse, the lower surface, as well as the petioles, strigose; peduncles axillary; flowers few, in a simple corymbose head. — Near St. Mary's, Georgia. — Leaves 3″ – 5″ long. Peduncles 12 – 15-flowered.

7. COLUBRINA, Rich.

Calyx herbaceous, with spreading lobes. Nutlets opening at the apex and down the inner angle. Embryo in thin albumen. Otherwise chiefly as in Ceanothus. — Tropical shrubs, with alternate parallel-veined leaves, and small flowers in close axillary cymes.

1. **C. Americana,** Nutt. Leaves coriaceous, ovate-oblong, entire, the lower surface, as also the branches and calyx, covered with a dense rust-colored pubescence; cyme small, shorter than the petiole; petals spatulate, emarginate, shorter than the calyx; drupe 3-lobed. — South Florida. — Leaves 2′ – 4′ long. Drupe 4″ in diameter.

8. GOUANIA, Jacquin. Chaw-stick.

Calyx 5-cleft, partly adnate to the ovary, the lobes spreading. Petals 5, shorter than the calyx, and inserted into the sinuses of the 5-lobed disk which lines its tube, hooded, and enclosing the short stamens. Ovary 3-celled, 3-ovuled. Style 3-cleft. Drupe dry, 3-lobed or 3-winged, separating from the central axis

into three valveless nutlets. Embryo in the axis of thin albumen. — Tropical, chiefly climbing shrubs, with alternate stipulate toothed leaves, and perfect or polygamous flowers in terminal spiked clusters.

1. **G. Domingensis,** L. Branches pubescent; leaves oblong-ovate, tapering into an obtuse point, serrate, petioled; spikes elongated, bearing a tendril at the base; drupe globose, 3-winged. — South Florida. — Leaves 2′–4′ long. Flowers minute, yellow. Lobes of the disk emarginate.

Order 40. CELASTRACEÆ. (Staff-tree Family.)

Shrubs, with simple stipulate leaves, and small regular flowers. — Sepals and petals 4–5, imbricated in the bud. Stamens 4–5, alternate with the petals, and inserted with them on the disk which fills the bottom of the calyx. Ovary free, 1–5-celled, with 1–several erect ovules in each cell. Styles united. Fruit capsular or drupaceous. Seeds often arilled. Embryo in the axis of the albumen. — Flowers perfect or polygamous.

Synopsis.

* Fruit a 1–2-seeded drupe.

1. MYGINDA. Ovary 4-celled. Stigmas 4. Drupe 1-seeded. Leaves opposite. Flowers perfect.
2. SCHÆFFERIA. Ovary 2-celled. Stigmas 2. Drupe 2-seeded. Leaves alternate. Flowers dicœcious.

* * Fruit a 3–5-valved capsule: seeds arilled.

3. EUONYMUS. Flowers perfect, in axillary cymes. Calyx flat. Leaves opposite.
4. CELASTRUS. Flowers polygamous, in terminal racemes. Calyx cup-shaped. Capsule globose. Leaves alternate.
5. MAYTENUS. Flowers axillary. Calyx flat. Capsule 3-angled. Leaves alternate.

1. MYGINDA, Jacq.

Flowers perfect. Sepals 4, united below. Petals 4, roundish. Stamens 4. Ovary 4-celled, with a solitary anatropous ovule in each cell. Style short, 4-cleft. Drupe 1-celled, 1-seeded. Seed erect. Embryo in thin albumen. Cotyledons flat. Radicle inferior. — Tropical shrubs, with small opposite coriaceous leaves, and minute white or reddish flowers on axillary forking peduncles.

1. **M. Rhacoma,** Swartz. Branches slender, pubescent, angled; leaves oblong, obtuse, crenate, nearly sessile, paler and often discolored beneath; peduncles filiform, shorter than the leaves, cymosely 2–4-flowered; calyx-lobes round, pubescent; petals oval, concave, ciliate; stigmas spreading; drupe obovate. — South Florida. — A small shrub. Leaves $\frac{1}{2}'$–$1'$ long, glabrous.

2. **M. ilicifolia,** Lam. Branches terete, pubescent; leaves smooth, round-ovate, spiny-toothed, short-petioled; peduncles shorter than the leaves, umbellately 3–4-flowered; calyx 4-toothed; petals rounded; drupe obovate, pointed with the persistent style. — South Florida. — A small shrub. Leaves $\frac{1}{2}'$–$\frac{3}{4}'$ long.

3. **M.? latifolia,** Swartz. Smooth; branchlets 4-angled; leaves opposite, coriaceous, obovate, rounded or emarginate at the apex, narrowed at the base into a short petiole, the margins revolute and obscurely crenate; cymes axillary and terminal, shorter than the leaves, widely spreading, few-flowered, or in the more sterile plant many-flowered; sepals roundish, much shorter than the oblong petals; disk with four emarginate lobes alternating with the stamens; ovary 2-celled, with a single suspended ovule in each cell; stigma sessile, 2-lobed; drupe ovoid, 1-seeded; embryo large, in thin albumen. — South Florida. — Shrub 8° – 10° high. Leaves 1′ long.

2. SCHÆFFERIA, Jacq.

Flowers dicœcious. Sepals 4, barely united at the base, rounded, 3-furrowed. Petals 4, spatulate-oblong, much longer than the calyx. Stamens 4. Ovary 2-celled. Stigmas 2, sessile. Drupe dry, 2-celled, 2-seeded. Embryo in oily albumen. Radicle inferior. — Shrubs or trees, with alternate leaves and small greenish flowers in axillary clusters.

1. **S. frutescens,** Jacq. Smooth; leaves obovate-oblong, entire, acute or obtuse; flowers 3 – 5 in a cluster, the slender pedicels arising from a wart-like peduncle; drupe globose. — South Florida. — A small tree with hard and close-grained wood. Leaves 1½′ long, pale green.

3. EUONYMUS, L. Spindle-tree.

Flowers perfect. Calyx flat, 4 – 5-cleft. Petals 4 – 5, spreading. Stamens 4 – 5, very short, inserted with the petals under the broad and fleshy disk which surrounds the ovary. Ovary 3 – 5-celled, with 2 erect or resupinate ovules in each cell. Style very short. Capsule 3 – 5-celled, loculicidally 3 – 5-valved. Seed enclosed in a red pulpy aril. — Erect or trailing shrubs, with 4-angled branches, opposite serrate leaves, and greenish or purplish flowers in axillary peduncled cymes.

1. **E. Americanus,** L. (Strawberry Bush.) Flowers greenish, pentamerous; peduncles 1 – 3-flowered; capsule warty; leaves short-petioled, varying from ovate or obovate to linear-lanceolate, serrulate. — Low shady woods, Florida and northward. May and June. — Shrub 3° – 6° high. Leaves 1′ – 2′ long.

2. **E. atropurpureus,** Jacq. Flowers purple, tetramerous; peduncles many-flowered; capsule smooth; leaves oblong, on rather long petioles, serrulate. — River-banks, Florida and northward. May and June. — Shrub 8° – 12° high. Leaves 2′ – 5′ long. Flowers dark purple.

4. CELASTRUS, L. Staff-tree.

Flowers somewhat dicœcious. Calyx cup-shaped, 5-cleft. Petals 5, spreading. Stamens 5, inserted with the petals into the edge of the cup-shaped fleshy disk which fills the tube of the calyx, abortive in the fertile flower. Ovary 2 – 4-celled, the cells 2-ovuled. Style thick. Capsule globose, commonly 3-celled

and 3-valved. Seeds 1 - 2 in each cell, enclosed in a fleshy scarlet aril. Embryo in the axis of copious fleshy albumen. — Climbing shrubs, with alternate leaves, and small greenish flowers in axillary or terminal racemes.

1. **C. scandens,** L. Leaves oblong-ovate or obovate, acuminate, serrate, smooth; racemes terminating the branches, nearly simple; capsule orange-colored. — Woods and banks of streams along the mountains of North Carolina, and northward. June.

5. MAYTENUS, Juss.

Flowers polygamous. Calyx flat, 5-cleft. Petals 5. Stamens 5, very short, inserted with the petals under the edge of the flat circular disk which envelops the ovary. Ovary 2 - 3-celled, with a solitary erect ovule at the base of each cell. Style very short and thick. Stigma 2 - 3-lobed. Capsule coriaceous, 1 - 3-celled, loculicidally 2 - 3-valved, yellow within. Seeds 1 - 3, enclosed in a thin pulpy aril. Embryo in the axis of thin fleshy albumen. — Trees or shrubs. Leaves opposite or alternate. Flowers chiefly in axillary clusters.

1. **M. phyllanthoides,** Benth. Leaves fleshy, alternate, oblong-obovate, obscurely crenate and reticulate, glabrous; flowers minute, clustered, apparently perfect; capsule obovate, 3-angled, 1-celled, 1 - 3-seeded. — South Florida. — Leaves $1' - 1\frac{1}{2}'$ long.

Order 41. STAPHYLEACEÆ. (Bladder-nut Family.)

Erect shrubs, with opposite pinnate stipulate leaves, and perfect regular pentandrous flowers. — Calyx 5-parted, colored. Petals and stamens 5, perigynous. Ovary 2 - 3-celled. Ovules 1 - 8 in each cell, attached to the central angle of the cell. Fruit capsular or baccate. Seeds bony, truncated at the base. Embryo straight in scanty albumen.

1. STAPHYLEA, L. Bladder-nut.

Flowers perfect. Calyx erect, persistent. Petals obovate, erect, alternate with the sepals, imbricated in the bud. Stamens inserted with the petals into the edge of the 5-lobed disk which fills the base of the calyx. Ovary 3-celled, the cells sometimes separate above, 6 - 8-ovuled. Capsule 3-lobed, membranaceous, inflated, few-seeded. — Leaflets stipellate. Flowers white, in drooping compound racemes.

1. **S. trifolia,** L. Leaves trifoliolate; leaflets ovate, acuminate, serrate, pubescent beneath, the terminal one long-stalked; racemes lateral and terminal; styles 3, connivent; capsule reticulated, 1 - 3-seeded. — Damp woods, North Carolina, Tennessee, and northward. May. — Shrub 10° high. Capsules 2′ long, 1′ in diameter.

Order 42. SAPINDACEÆ. (Soap-berry Family.)

Trees or shrubs, rarely herbs, with exstipulate alternate or opposite leaves, and chiefly irregular and 7 – 9-androus flowers, imbricated in the bud. — Calyx 4 – 5-lobed. Petals 4 – 5, inserted with the stamens into a hypogynous or somewhat perigynous disk. Anthers opening lengthwise. Ovary 3-celled, the cells 1 – 2-ovuled. Seeds without albumen. Embryo mostly curved or convolute. Cotyledons incumbent, fleshy.

Synopsis.

Tribe I. **DODONEÆ.** — Ovules 2 – 3 in each cell. Embryo spirally coiled. Cotyledons distinct. — Leaves alternate.

1. DODONÆA. Ovules 2 in each cell. Petals none. Capsule 2 – 4-winged.

Tribe II. **SAPINDEÆ.** — Ovules usually solitary. Embryo curved or straight. Cotyledons distinct. — Leaves alternate.

2. HYPELATE. Ovules 2 – 3 in each cell. Petals 4 – 5, regular. Fruit drupaceous.
3. SAPINDUS. Ovules solitary. Petals 5, regular. Fruit baccate.
4. CARDIOSPERMUM. Ovules solitary. Petals 4, irregular. Fruit a bladder-like capsule.

Tribe III. **HIPPOCASTANEÆ.** — Ovules 2 in each cell. Embryo roundish. Cotyledons very thick and partly united. — Leaves opposite.

5. ÆSCULUS. Calyx 5-lobed. Petals 4 – 5, unequal. — Leaves digitate.

1. DODONÆA, L.

Flowers perfect or polygamous. Calyx 3 – 5-parted. Petals none. Stamens 5 – 8: anthers thick, on short filaments. Ovary 3 – 4-celled, with 2 ovules in each cell; the upper one ascending, the lower pendulous. Styles united. Capsule membranaceous, 2 – 4-winged, septicidally 2 – 4-valved, the cells 1 – 2-seeded. Embryo spirally coiled. — Trees or shrubs, with chiefly simple leaves, and axillary or terminal whitish or greenish flowers.

1. **D. viscosa,** L. Leaves viscid, obovate-oblong, entire, parallel-veined; racemes axillary and terminal, shorter than the leaves; capsule 3-winged, 3-seeded. — South Florida. — Shrubs 6° – 10° high. Flowers greenish.

2. HYPELATE, P. Browne.

Calyx 3 – 5-parted. Petals 4 – 5, regular. Stamens 6 – 10, inserted on the inner face of the cup-shaped disk which fills the base of the calyx. Ovary 2-celled, with 2 – 3 pendulous ovules in each cell. Styles united. Stigma 2-lobed. Drupe globose, 1 – 2-seeded. Embryo erect. — Trees with alternate trifoliolate or abruptly pinnate leaves, and clustered or panicled polygamous flowers.

1. **H. trifoliata,** P. Browne. Leaves trifoliolate; leaflets obovate, coriaceous, glabrous, entire; panicles corymbose, slender, axillary, longer than the leaves, few-flowered; calyx 3 – 4-parted, pubescent within; petals 4, ciliate; drupe black, 1-seeded. — South Florida. — A small tree, with brittle branches. Leaflets 1′ long, with fine oblique parallel veins. Flowers small, white. Stamens 6 – 8.

2. **H. paniculata,** Don. Leaves abruptly pinnate; leaflets 2 or 4, oblong, obtuse, entire, smooth, opposite; panicles axillary and terminal, with compressed branches; flowers hoary-tomentose; calyx-lobes and petals 4, rounded; cells of the ovary 2-ovuled. (Melicocca paniculata, *Juss.?*) — South Florida. — Branches purplish, dotted with white. Leaflets 2′ – 3′ long.

3. SAPINDUS, L. Soap-berry.

Calyx 5-parted, deciduous. Petals 5, regular, with a scale at the base of each within. Stamens 8 – 10, inserted on the hypogynous disk. Styles united. Stigmas 3. Ovary 3-celled, the cells 1-ovuled. Fruit baccate, globose or 2 – 3-lobed, 1 – 3-seeded. Seeds bony. Embryo incurved. — Trees, with abruptly pinnate leaves, and small polygamous flowers in axillary or terminal racemes or panicles.

1. **S. marginatus,** Wild. Petioles wingless; leaflets 9 – 18, opposite or alternate, ovate-lanceolate, unequal-sided, strongly veined above; panicles large, dense-flowered; fruit globose. — Georgia and Florida, near the coast, and westward. — A tree 20° – 40° high. Flowers white.

4. CARDIOSPERMUM, L.

Sepals 4, the 2 outer ones much shorter. Petals 4, irregular, each with a petal-like scale at the base within; those of the 2 outer petals entire, the others with a crested appendage on the inner edge. Stamens 8. Disk 2-glandular. Cells of the ovary 1-ovuled. Style 3-cleft. Capsule 3-angled, 3-celled, loculicidally 3-valved, inflated. Seed furnished with a cordate aril. — Herbs, climbing by tendrils. Leaves biternate.

1. **C. Halicacabum,** L. — South Florida, apparently native, and not uncommon in cultivation. — Annual. Stem slender. Leaflets ovate-lanceolate, incisely lobed and toothed. Capsule pear-shaped, 1′ in diameter.

5. ÆSCULUS, L. Horsechestnut. Buckeye.

Calyx 5-lobed, unequal. Petals 4 – 5, unequal, clawed. Stamens 5 – 8, usually 7, inserted on the annular hypogynous disk. Style slender. Ovary 3-celled, the cells 2-ovuled. Capsule coriaceous, 1 – 3-celled, loculicidally 2 – 3-valved, 1 – 3-seeded. Cotyledons very large and thick, partly united. — Trees or shrubs, with opposite long-petioled digitate leaves, and showy polygamous flowers, in terminal panicles.

§ 1. Æsculus proper. *Fruit prickly.*

1. **Æ. glabra,** Willd. Stamens almost twice the length of the erect nearly equal pale yellow petals; panicle oblong-ovate, loosely flowered; leaflets 5, oval or oblong, acuminate, unequally serrulate, smooth or slightly pubescent beneath. (Æ. pallida, *Willd.*) — Banks of rivers, Tennessee and northward. May and June. — A small tree with rough strong-scented bark. Flowers small.

§ 2. Pavia. *Fruit smooth.*

2. **Æ. Pavia,** L. Stamens slightly exserted; claws of the two upper

petals as long as the tubular calyx; panicle oblong; leaflets 5, varying from lanceolate to oval, short-acuminate, finely serrate, smooth, or nearly so, on both surfaces — Rich soil, Florida to North Carolina, and westward. March – May. — A shrub, or in the upper districts, a small tree. Flowers red.

3. **Æ. flava,** Ait. Stamens included; claws of the lateral petals longer than the tubular-campanulate calyx; panicle oblong, pubescent; leaflets 5 – 7, obovate-oblong, acuminate, finely serrate, pubescent beneath. — Rich soil, in the middle and upper districts of Georgia to North Carolina and northward. April and May. — A shrub or small tree. Flowers pale yellow. *Æ. discolor, Pursh,* is a form of this species with more strongly serrate leaflets, and flesh-colored or dull purple flowers.

4. **Æ. parviflora,** Walt. Stamens 3 times as long as the corolla; claws of the nearly similar petals longer than the obconical calyx; panicle racemose, very long; leaflets 5 – 7, oval-obovate, tomentose beneath. (*Æ. macrostachya, Michx.*) — Upper districts of Georgia and South Carolina. April and May. — Shrub 3° – 9° high. Flowers white. Stamens 6 or 7.

Order 43. ACERACEÆ. (Maple Family.)

Trees or shrubs, with opposite palmately lobed or pinnate exstipulate leaves, and regular mostly polygamous or dioecious flowers, with an imbricated æstivation. — Calyx 4 – 9-lobed. Petals as many as the lobes of the calyx, or none. Stamens 4 – 12, inserted with the petals into a hypogynous disk. Ovary 2-celled, with 2 pendulous amphitropous ovules in each cell, forming in fruit a double 2-seeded samara. Styles 2. Seeds with little or no albumen. Embryo folded or spirally coiled.

1. ACER, L. Maple.

Flowers polygamous. Petals usually 5 – 8, or none. Stamens 4 – 12. — Leaves simple, palmately lobed. Flowers clustered or racemose.

* *Flowers in terminal racemes, appearing after the leaves.*

1. **A. Pennsylvanicum,** L. (Striped Maple.) Racemes simple, drooping; flowers (15 – 25) large; petals obovate; leaves slightly cordate, with 3 acuminate finely serrate lobes; samara large. (*A. striatum, Lam.*) — Banks of mountain streams, Georgia and northward. May. — A shrub or small tree, with striped bark. Flowers greenish.

2. **A. spicatum,** Lam. (Mountain Maple.) Racemes compound, erect; flowers small, very numerous; petals linear-spatulate; leaves cordate, 3-lobed, coarsely serrate; samara small. — With the preceding. — Shrub 6° – 10° high. Leaves pubescent beneath.

* * *Flowers on long and drooping umbellate or corymbose pedicels, developed from lateral and terminal buds.*

3. **A. saccharinum,** Wang. (Sugar Maple.) Leaves cordate, with 3 – 5 acute or acuminate sinuate-toothed lobes, paler and slightly pubescent be-

neath; flowers umbellate-corymbed, appearing with the leaves; calyx bell-shaped, fringed on the margin, nearly as long as the stamens; petals none. — Rich soil, chiefly in the upper districts, and northward. April and May. — A large tree. Leaves 3′–5′ wide.

Var. **Floridanum.** Leaves truncate or slightly cordate at the base, with 3–5 obtuse and obscurely 3-toothed lobes; flowers umbellate, appearing before the leaves; calyx short, cup-shaped, hairy, one third as long as the stamens. — Upland woods, Middle Florida. March and April. — A small tree. Leaves, flowers, and fruit scarcely half as large as in the ordinary form.

* * * *Flowers on short and erect clustered pedicels, developed from lateral buds, and appearing before the leaves: fruiting pedicels long and drooping.*

4. **A. dasycarpum,** Ehrh. (SILVER MAPLE.) Leaves cordate, 3–5-lobed, sharply toothed and serrate, white beneath; petals none; samara large, woolly when young. — Banks of rivers, Florida to Mississippi, and northward. February and March. — A tree 30°–50° high, with soft wood. Flowers yellowish.

5. **A. rubrum,** L. (RED or SWAMP MAPLE.) Leaves 3–5-lobed, or undivided, smooth or pubescent, either cordate or rounded, or sometimes acute at the base, toothed and serrate, white beneath; petals oblong or linear; samara small, smooth. — Swamps, Florida to Mississippi, and northward. February and March. — A small tree. Flowers and fruit red.

2. NEGUNDO, Mœnch. ASH-LEAVED MAPLE.

Flowers diœcious. Calyx minute. Petals none. Stamens 4–5, hypogynous. — A small tree, with smooth green bark. Leaves pinnately 3–5-foliolate, the leaflets ovate or oblong, lobed or toothed. Flowers small, greenish; the sterile ones on long and drooping clustered pedicels, the fertile ones racemose, both from lateral buds appearing with or before the leaves.

1. **N. aceroides,** Mœnch. (Acer Negundo, *L.*) River-banks, Florida and northward. March and April.

ORDER 44. MALPIGHIACEÆ. (MALPIGHIA FAMILY.)

Trees or shrubs, with opposite simple dotless and mostly stipulate leaves, and regular racemose or corymbose flowers on usually jointed pedicels. — Calyx 5-parted. Petals 5, alternate with the calyx-lobes, unguiculate, sometimes wanting. Stamens 10, alternate with the petals, and inserted with them into a hypogynous disk: anthers roundish. Ovary solitary, mostly 3-lobed, consisting of three more or less united carpels. Styles 3, distinct or united. Fruit composed of one to three 1-seeded cells or carpels. Seeds pendulous, without albumen. Cotyledons thick or leafy.

1. BYRSONIMA, Rich.

Calyx with 10 glands at the base without. Petals 5. Stamens monadelphous at the base. Styles 3. Fruit drupaceous, 3-celled, 3-seeded. — Racemes terminal, simple or branched.

1. **B. lucida,** Rich. Smooth; stem much-branched; leaves coriaceous, wedge-obovate, obtuse, entire, short-petioled, shining above, paler beneath, veinless; racemes erect, bracted, simple, twice the length of the leaves; pedicels slender, spreading; petals yellow, orbicular-cordate, wavy, long-clawed; drupe smooth, globose. — South Florida. — A small shrub. Leaves 1′ long. Drupe as large as a grain of pepper.

Order 45. POLYGALACEÆ. (Milkwort Family.)

Herbs or shrubs, with entire exstipulate leaves, and irregular hypogynous monadelphous or diadelphous flowers. — Anthers 1-celled, opening by a terminal pore. Ovary 2-celled, with a single anatropous pendulous ovule in each cell. Seeds often carunculate. Embryo straight in scanty albumen. Radicle superior.

1. POLYGALA, L. Milkwort.

Sepals 5, persistent, unequal; the two lateral ones (*wings*) larger and petal-like. Petals 3, more or less united; the middle one (*keel*) larger, and usually crested at the apex. Stamens 8, rarely 6, united into a tube, or into two equal sets, and also with the claws of the petals. Style curved, clavate. Stigma terminal or lateral. Capsule 2-celled, 2-seeded. Seeds suspended, carunculate. — Chiefly herbs. Leaves alternate or whorled. Flowers in terminal spikes or racemes, rarely axillary, or radical and imperfect.

§ 1. *Flowers in globose or oblong more or less compact spikes.*

* *Spikes corymbose: biennials.*

1. **P. cymosa,** Walt. Stem tall, simple; leaves scattered, linear, acute, the upper bract-like, the lowest long (6′ – 9′) and crowded; corymbs simple or compound; wings oblong, abruptly acute; seeds minute, globose-obovate, smooth; caruncle none. (P. corymbosa, *Ell.* P. acutifolia, *Torr. & Gray.* P. graminifolia, *Poir.* P. attenuata, *Nutt.*) — Pine barren ponds, Florida to North Carolina, and westward. July. — Stems 2° – 4° high. Corymbs very large and compound, or small and simple. Flowers yellow, turning dark green in drying. Plant yellowish.

2. **P. ramosa,** Ell. Stem low, simple, or branching and leafy from the base to the summit; leaves fleshy, lanceolate, acute, scattered, the lowest spatulate-obovate, obtuse, crowded; corymbs compound, fastigiate; wings ovate-lanceolate, acuminate; lobes of the caruncle small, roundish, embracing the base of the minute oval hairy seed. (P. corymbosa, *Nutt.* P. cymosa, *Poir.*) — Low open pine barrens, Florida to Mississippi, and northward. July – September. — Stems 6′ – 12′ high. Flowers yellow, turning green in drying.

3. **P. Baldwinii,** Nutt. Stem angled, simple; leaves alternate, lanceolate, acute, the lowest spatulate; corymbs compound; spikes dense; wings ovate-lanceolate, tapering into a long and slender point; seeds very small, globose, hairy; caruncle minute. — Low pine barrens, Georgia, Florida, and westward. July and August. — Stem 1° – 1½° high. Leaves ½′ – 1′ long. Flowers white, fragrant.

* * *Spikes solitary: leaves alternate.*

+ *Flowers yellow: biennials.*

4. **P. lutea,** L. (Yellow Bachelor's-Button.) Stem simple or with spreading branches; leaves lanceolate, acute, the lowest clustered, spatulate-obovate, obtuse; spikes dense, globose or oblong; wings elliptical, abruptly pointed; lobes of the caruncle nearly as long as the obovate sparse-hairy seed. — Low pine barrens, Florida to Mississippi, and northward. June – August. — Stem 6′ – 12′ high. Flowers orange-yellow.

5. **P. nana,** DC. Low; stems divided at the base into several short peduncle-like branches; leaves chiefly radical, clustered, spatulate or linear, obtuse; spikes thick, at length cylindrical, the earliest ones sessile; wings ovate-lanceolate, acuminate; lobes of the caruncle half as long as the obovate hairy seed. (P. viridescens, *Nutt.*) — Low sandy pine barrens, Florida to South Carolina, and westward, flowering throughout the year. — Stems 2′ – 4′ high. Spikes 1′ – 2′ long. Flowers yellow.

+ + *Flowers purple or rose-color: annuals: stems branching.*

6. **P. sanguinea,** L. Leaves oblong-linear, acute; spikes ovate or roundish, obtuse; flowers imbricated; wings broadly ovate, obtuse, sessile; lobes of the caruncle rather shorter than the pear-shaped sparse-hairy seed. (P. purpurea, *Nutt.*) — Low grounds, North Carolina and northward. July – Sept. — Stems 1° high. Flowers reddish-purple. Bracts persistent.

7. **P. fastigiata,** Nutt. Stems slender, at first simple; leaves narrow-linear, acute; spikes globose, obtuse; wings oblong-obovate tapering into a distinct claw at the base; caruncle as long as the stalk of the sparse-hairy pear-shaped seed. (P. sanguinea, *Torr. & Gray.*) — Low pine barrens, Florida to North Carolina, and westward. July – Oct. — Stems 10′ – 15′ high. Leaves erect. Flowers small, bright rose-color. Bracts deciduous.

8. **P. Nuttallii,** Carey. Leaves short, linear, obtuse; spikes oblong, acute, dense; wings short, elliptical, slightly clawed; lobes of the caruncle collateral, one third as long as the obovate very hairy seed. (P. sanguinea, *Nutt.* P. ambigua, *Torr. & Gray.*) — Dry sandy soil, North Carolina and northward. August. — Stem 4′ – 8′ high, the branches fastigiate. Spikes and greenish and purple flowers smaller than in No. 7. Bracts persistent.

9. **P. Chapmanii,** Torr. & Gray. Stems slender, at length sparingly branched; leaves scattered, narrow-linear, acute; spikes long, lanceolate, acute, loose-flowered; wings obovate, short-clawed; lobes of the caruncle spreading, as long as the stalked base of the pear-shaped very hairy seed. — Low pine barrens near the coast, West Florida and westward. June – August. — Stems 1° – 1½° high. Spikes 1′ – 2′ long. Flowers bright-purple. Bracts persistent.

10. **P. incarnata,** L. Stem often simple, glaucous; leaves scattered, linear, fleshy, sometimes minute and subulate; spikes lanceolate, acute, dense-flowered; petals united into a tube which is twice as long as the elliptical wings, conspicuously crested; caruncle spongy, as long as the stalk of the oval hairy seed. — Dry sandy soil, Florida to Mississippi, and northward. June – August. — Stem 1° – 2° high. Bracts deciduous. Flowers and often the rachis purple.

11. **P. setacea,** Michx. Stems simple or sparingly branched, slender; leaves minute, scale-like; spikes oblong, dense-flowered, acute; wings oblong, acute, as long as the petals; caruncle and seeds as in No. 10. — Low pine barrens, Florida to North Carolina, and westward. May – July. — Stem 1° high. Spikes $\frac{1}{2}'$ – 1′ long. Flowers pale rose-color or whitish. Bracts deciduous.

** * * Spikes solitary: leaves whorled: flowers purple.*

12. **P. cruciata,** L. Stem erect, 4-angled, simple or branched; leaves in fours, linear or oblong-linear, thick, obtuse, the upper ones alternate; spikes large, ovate, becoming cylindrical, short-peduncled; wings ovate, tapering into a long subulate point; lobes of the caruncle linear, collateral, as long as the smoothish oval seed. — Pine-barren swamps, Florida to Mississippi, and northward. July – Oct. — Stem 6′ – 12′ high. Spikes 1′ – 2′ long, $\frac{3}{4}'$ thick. Flowers pale rose-color. Bracts persistent.

13. **P. brevifolia,** Nutt. Stem weak, 4-angled, with long and spreading branches; leaves thin, lanceolate or linear, acute, the lower ones in fours; spikes small, ovate, long-peduncled; wings lanceolate-ovate, barely pointed; caruncle as long as the obovate hairy seed. — Bogs, Florida and northward. July – Oct. — Stem 1° – $1\frac{1}{2}$° long. Spikes scarcely half as large as in the preceding. Flowers reddish-purple. Bracts persistent.

14. **P. Hookeri,** Torr. & Gray. Stems short, weak, much branched, 4-angled; leaves in fours, short, linear, acutish; spikes long-peduncled, ovate-lanceolate, acuminate, loose-flowered; wings erect, lanceolate-ovate, acute; caruncle as long as the ovoid sparse-hairy and viscid seed. — Low grassy pine barrens, West Florida and westward. July – Sept. — Stems 6′ – 10′ high. Leaves 4″ – 6″ long; those of the branches mostly alternate. Flowers pale rose-color. Bracts persistent.

§ 2. *Flowers in slender racemes or spikes.*

* *Leaves alternate: perennials or biennials.*

15. **P. grandiflora,** Walt. Pubescent; stems branching; leaves lanceolate; flowers large, crestless, scattered in long racemes; fruiting pedicels drooping; wings large, orbicular, erect; caruncle enclosing the stalk of the oblong hairy seed. (P. pubescens, *Muhl.*) — Varies with smoothish linear leaves, and smaller flowers. (P. flabellata, *Shuttl.*) — Dry light soil, Florida to South Carolina, and westward. July – Sept. ♃ — Stem 1° high. Racemes 3′ – 6′ long, often lateral by the prolongation of the stem. Flowers bright purple, turning greenish.

16. **P. polygama,** Walt. Smooth; stems numerous, simple; leaves oblong-linear, the lowest spatulate or obovate; flowers of two kinds, viz. one

kind showy and perfect, borne in a loose terminal raceme, the other imperfect, but fruiting, in radical (rarely axillary) spikes; wings obovate; caruncle half as long as the obovate very hairy seed. (P. rubella, *Muhl.*) — Wet or dry sandy barrens, Florida to Mississippi, and northward. May and June. ② — Stems 6′ – 12′ high, very leafy. Racemes 2′ – 6′ long. Flowers purple.

17. **P. Senega,** L. (SENECA SNAKEROOT.) Stems several from a thick woody root, erect or ascending, simple or branching above; leaves numerous, lanceolate, the upper ones acute (1′ long); spike cylindrical, peduncled; wings round-obovate, as long as the capsule; lobes of the caruncle linear, as long as the obovate hairy seed. — Var. LATIFOLIA, Torr. & Gray. Stem taller (1° – 1½°); leaves large (2′ – 4′ long), ovate or ovate-lanceolate, acute or acuminate at each end. — Dry rocky woods in the upper districts of North Carolina and northward; the variety in Tennessee, and northward. May and June. ♃ — Stems 8′ – 12′ high. Spikes 1′ – 1½′ long. Flowers greenish-white.

18. **P. alba,** Nutt. Stems several from a somewhat woody root, erect or ascending, angular, at length branched above; leaves linear, narrowed toward the base, acute, or lowest ones obtuse; spike long-peduncled, linear-lanceolate, acuminate; flowers short-pedicelled; wings oval, rather longer than the capsule; lobes of the caruncle shorter than the oblong-obovate very hairy seed. (P. bicolor, *Kunth.*) — Interior of Alabama, *Buckley,* and westward. — Stems ½° – 1° high. Spikes 1′ – 3′ long. Flowers white. Bracts deciduous.

* * *Leaves whorled: flowers small, greenish or white, in slender spikes.*

19. **P. Boykinii,** Nutt. Perennial; stems numerous, angled, simple or sparingly branched; leaves 4 – 5 in a whorl, the lower ones oblong-obovate, the upper lanceolate and scattered; spike linear, long-peduncled; wings obovate, as long as the capsule; caruncle half as long as the oblong-obovate curved and very hairy seed. — Rich calcareous soil, Florida, Georgia, and westward. May – July. ♃ — Stems 1° – 2° high. Leaves 1′ long. Spikes 2′ – 3′ long. Flowers white.

20. **P. verticillata,** L. Annual; stems low, 4-angled, much branched; leaves 4 – 5 in a whorl, linear, acute, the upper ones scattered; spikes lanceolate; wings roundish, as long as the capsule; lobes of the caruncle half as long as the oblong hairy seed. — Dry sandy soil, Florida to Mississippi, and northward. June – Aug. — Stem 4′ – 8′ high. Spikes ½′ – 1′ long. Flowers greenish-white.

21. **P. leptostachys,** Shuttl. Annual; stems filiform or setaceous, simple, or branched above, straight; leaves remote, 4 – 5 in a whorl, narrow-linear or filiform, acute; spike linear, long-peduncled; wings oval, nearly sessile, smaller than the capsule; caruncle half as long as the smooth curved clavate-obovate seed. — Dry sand hills, Florida. May – August. — Stems 10′ – 15′ high. Flowers greenish.

§ 3. *Flowers axillary, and with imperfect radical ones, as in No.* 16.

22. **P. paucifolia,** L. Perennial; flowering stems erect, simple, leafy at the summit; leaves large, ovate, alternate, narrowed into a petiole, the lower ones bract-like; flowers (1 – 3) peduncled, crested, very large; wings obovate;

lobes of the caruncle subulate, varying in length; seeds hairy; radical spikes bracted. — Mountains of Georgia and northward. May. — Stems 4′–6′ high, from a long prostrate base. Flowers ¾′ long, purple.

Order 46. KRAMERIACEÆ. (Rhatany Family.)

Silky-pubescent herbs or shrubs, with diffuse stems, alternate leaves, and irregular hypogynous purplish flowers, on axillary 2-bracted and jointed peduncles. — Sepals 5, colored, deciduous. Petals 5, shorter than the sepals; the 3 posterior ones, long-clawed, often united; the 2 anterior broad, sessile and fleshy. Stamens 4, the posterior ones distinct or united. Anthers 2-celled, opening by a terminal pore. Ovary 1-celled, 2-ovuled. Fruit 1-seeded, woody, indehiscent, armed with hispid prickles. Albumen none. Radicle concealed in the cotyledons.

1. KRAMERIA, Loefl.

Characters of the order.

1. **K. lanceolata,** Torr. Herbaceous; stems slender, prostrate, mostly branching; leaves lanceolate or linear, acute; peduncles longer than the leaves, leafy-bracted above the middle; claws of the posterior petals, and stamens, united; fruit globose, downy, armed with few strong spreading spines. — Tampa Bay, South Florida, and westward. — Root long and woody. Stems 1° long.

Order 47. LEGUMINOSÆ. (Pulse Family.)

Herbs, shrubs, or trees, with chiefly compound alternate stipulate leaves, and papilionaceous or regular perigynous or hypogynous flowers. — Sepals 5, more or less united. Petals 5, rarely fewer, or none. Stamens monadelphous, diadelphous, or distinct. Ovary simple, free, forming a legume in fruit. Seeds without albumen. Leaves almost always with entire margins.

Synopsis.

Suborder I. PAPILIONACEÆ. Corolla of 5 (rarely fewer) irregular petals, inserted into the base of the calyx, rarely perigynous, imbricated in the bud, mostly papilionaceous; viz. one upper and exterior, termed the *vexillum* or *standard;* two lateral, called *wings;* and two lower and interior, oftener united by their contiguous margins, forming together the *keel.* Stamens 10 (rarely 5), separate, monadelphous, or diadelphous (9 & 1, or 5 & 5). Legume 1-celled (sometimes partly 2-celled by the introversion of the sutures), or several-celled by transverse partitions. Style simple. Cotyledons thick.

Tribe I. **LOTEÆ.** Corolla papilionaceous. Stamens 10 (except No. 8). Legume continuous (not jointed). Cotyledons leafy in germination. — Stems (except No. 12) not twining, nor climbing.

* Stamens monadelphous: anthers of 2 forms. Leaves simple, or palmately compound.

1. CROTALARIA. Calyx 5-lobed. Legume inflated. Upper stipules decurrent.
2. LUPINUS. Calyx 2-lipped. Legume flattened. Stipules not decurrent.

* * Stamens diadelphous: anthers alike. Leaves trifoliolate, rarely palmate or pinnate, the earliest ones alternate.

3. MEDICAGO. Legume membranaceous, curved or coiled, 1-many-seeded. Flowers racemed.
4. MELILOTUS. Legume coriaceous, straight, rugose or veined, 1-4-seeded. Flowers racemed or spiked.
5. TRIFOLIUM. Legume smooth, membranaceous, 1-4-seeded. Flowers capitate.
6. HOSACKIA. Legume straight, many-seeded. Peduncle 1-3-flowered.

* * * Stamens monadelphous or diadelphous. Legume mostly 1-seeded and indehiscent. Plants dotted with small dark glands. Earliest leaves opposite.

+ Legume included in the calyx.

7. PSORALEA. Corolla papilionaceous. Stamens 10, diadelphous: half of the anthers often imperfect.
8. PETALOSTEMON. Stamens 5, united into a cleft tube, and adnate to the claws of four of the nearly regular petals.
9. DALEA. Stamens 9 or 10, the tube partly adnate to the claws of the petals.

+ + Legume exserted.

10. AMORPHA. Stamens 10, monadelphous. Wings and keel none.

* * * * Stamens mostly diadelphous. Legume 1-many-seeded, 1-celled, 2-valved. Leaves pinnate.

+ Trees or shrubs.

11. ROBINIA. Legume flat and thin, margined on one edge. Trees or shrubs.
12. WISTARIA. Legume nearly terete, coriaceous, contracted between the seeds. Twining shrubs.

+ + Herbs.

13. TEPHROSIA. Calyx 5-cleft. Vexillum large. Legume compressed, many-seeded. Leaves unequally pinnate.
14. INDIGOFERA. Calyx minute, 5-cleft. Vexillum small. Legume terete or angled, 2-many-seeded. Leaves unequally pinnate.
15. GLOTTIDIUM. Calyx truncate. Legume oblong, 2-seeded. Leaves abruptly pinnate.
16. SESBANIA. Calyx 5-toothed. Legume very long and slender, many-seeded. Leaves abruptly pinnate.

* * * * * Stamens diadelphous. Legume 2-celled lengthwise, or 1-celled, with one of the sutures turned inward. Leaves pinnate.

17. ASTRAGALUS. Stamens 10, diadelphous. Legume tumid.

Tribe II. **VICIEÆ.** Stamens diadelphous (9 & 1). Legume 2-valved, not jointed. Cotyledons thick and fleshy, remaining under ground in germination. — Climbing vines; the petioles of the pinnate leaves ending in a tendril.

18. VICIA. Style filiform, bearded at the apex, or on the side facing the keel.
19. LATHYRUS. Style flattened, bearded on the side facing the vexillum.

Tribe III. **HEDYSAREÆ.** Stamens monadelphous or diadelphous. Legume separating transversely into 1-seeded indehiscent reticulated joints, or 1-jointed. — Stems not twining.

* Flowers yellow.

20. ÆSCHYNOMENE. Leaves pinnate. Stamens diadelphous (5 & 5). Flowers perfect.
21. ZORNIA. Leaves palmately compound. Legume 2-5-jointed. Flowers perfect.
22. STYLOSANTHES. Leaves trifoliolate. Anthers of 2 forms. Flowers monœcious.
23. CHAPMANNIA. Leaves pinnate. Anthers alike. Flowers monœcious.

* * Flowers white or purplish.

24. LESPEDEZA. Legume 1-jointed. Peduncles axillary.

25. DESMODIUM. Legume 2 - 6-jointed, bristly. Racemes terminal.

Tribe IV. **PHASEOLEÆ.** Stamens monadelphous or diadelphous (9 & 1). Legume 2-valved, not jointed. Cotyledons thick and fleshy; usually raised above ground in germination. — Chiefly twining vines.

* Ovary 1 - 2-ovuled.

26. RHYNCHOSIA. Legume oblong. Flowers yellow. Leaves trifoliolate.

* * Ovary few or many-ovuled.

+– Keel spirally twisted.

27. APIOS. Leaves pinnate, not stipellate.
28. PHASEOLUS. Leaves trifoliolate, stipellate.

+– +– Keel straight. Leaves trifoliolate (except one species of Galactia).

++ Legume terete, torulose.

29. VIGNA. Flowers yellow. Vexillum roundish. Stems twining.
30. ERYTHRINA. Flowers scarlet. Vexillum narrow, elongated. Stems erect.

++ ++ Legume flattened.

= Bracts opposite. Vexillum very large.

31. CLITORIA. Calyx tubular, 5-toothed. Vexillum spurless at the base.
32. CENTROSEMA. Calyx short, 5-cleft. Vexillum spurred at the base.

= = Bracts alternate.

33. AMPHICARPÆA. Calyx 4 - 5-toothed. Flowers of two kinds. Bracts persistent.
34. GALACTIA. Calyx 4-cleft. Bracts deciduous. Legume linear.
35. CANAVALIA. Stamens monadelphous. Calyx bilabiate. Hilum linear. Legume three-ridged on the back.
36. DOLICHOS. Stamens diadelphous (9 & 1). Calyx 5-cleft. Hilum oval.

Tribe V. **DALBERGIEÆ.** Stamens 10, monadelphous or diadelphous. Legume indehiscent. Cotyledons thick and fleshy. — Trees or shrubs.

37. PISCIDIA. Legume compressed, 4-winged. Leaves pinnate.

Tribe VI. **SOPHOREÆ.** Stamens 10, separate. Legume not jointed. — Erect herbs, shrubs, or trees.

* Legume dehiscent.

38. BAPTISIA. Stamens deciduous. Legume inflated, stipitate, few-seeded. Leaves simple or trifoliolate.
39. THERMOPSIS. Stamens persistent. Legume nearly sessile, flattened, many-seeded. Leaves trifoliolate.
40. CLADRASTIS. Stamens persistent. Legume flat, few-seeded. Leaves pinnate. Tree.

* * Legume indehiscent.

41. SOPHORA. Legume moniliform. Leaves pinnate. Shrubs.

Suborder II. CÆSALPINIEÆ. Corolla irregular and somewhat papilionaceous, or almost regular, imbricated in the bud; the upper petal interior. Stamens separate. Embryo straight.

42. CIRCIS. Flowers perfect, somewhat papilionaceous. Calyx 5-toothed. Leaves simple.
43. CASSIA. Flowers perfect, irregular. Calyx deeply 5-parted. Anthers dissimilar. Leaves pinnate.
44. GLEDITSCHIA. Flowers polygamous, almost regular. Calyx 3 - 5-parted. Leaves pinnate and bipinnate.

Suborder III. MIMOSEÆ. Corolla regular, hypogynous, valvate in the bud. Stamens distinct or united, often very numerous, inserted with the petals. Embryo straight. — Leaves pinnate or 2 - 3-pinnate. Flowers polygamous.

* Flowers perfect and staminate. Petals united.

45. MIMOSA. Filaments distinct. Legume jointed, flat.

46. SCHRANKIA. Filaments distinct. Legume not jointed, echinate.

47. PITHECOLOBIUM. Filaments united into a tube below. Legume broad and flat, mealy or pulpy within.

* * Flowers perfect and neutral. Petals distinct.

48. DESMANTHUS. Sterile filaments filiform. Legume linear, many-seeded.

49. NEPTUNIA. Sterile filaments flat or petal-like. Legume oblong, few-seeded.

SUBORDER I. PAPILIONACEÆ. PULSE FAMILY.

1. CROTALARIA, L. RATTLE-BOX.

Calyx 5-lobed. Vexillum cordate : keel falcate. Stamens monadelphous. Anthers alternately oblong and roundish. Capsule inflated, oblong, many-seeded. — Low herbs, with simple leaves ; the upper ones with broad decurrent inversely sagittate stipules. Racemes opposite the leaves. Flowers yellow. Legumes dark-purple.

1. **C. sagittalis,** L. Annual ; stems low, branching, shaggy with rust-colored spreading hairs ; leaves nearly sessile, oval or oblong, hairy ; racemes short, 2 – 3-flowered. — Barren sandy soil, Florida and northward. June and July. — Stem 3′ – 6′ high. Racemes 2′ – 3′ long.

2. **C. ovalis,** Pursh. Perennial ; stems several, branching, prostrate or ascending, rough with appressed hairs ; leaves short-petioled, oval or oblong, hairy ; racemes long, 3 – 6-flowered. — Dry pine barrens, Florida to North Carolina, and westward. May – July. — Stem 6′ – 12′ high. Racemes 4′ – 6′ long. Flowers distant.

3. **C. Purshii,** DC. Perennial ; stems slender, erect, roughened with scattered appressed hairs ; leaves thick, smooth above, the lower ones oblong, the upper linear ; racemes long, 5 – 10-flowered. — Flat grassy pine barrens, Florida to South Carolina, and westward. May and June. — Stem 12′ – 18′ high. Racemes 6′ – 12′ long. Flowers distant.

2. LUPINUS, Tourn. LUPINE.

Calyx 2-lipped, 5-toothed. Vexillum with the sides reflexed. Keel falcate, acute. Stamens monadelphous, with alternate anthers oblong and roundish. Capsule oblong, compressed, many-seeded ; the seeds often separated by cellular partitions. — Herbs, with simple or palmately 5 – many-foliolate leaves, and showy flowers in terminal racemes.

1. **L. perennis,** L. Stem pubescent, erect ; leaves palmately 7 – 9-foliolate ; leaflets obovate-oblong, obtuse, more or less hairy ; stipules minute ; racemes long, loosely many-flowered ; flowers purplish or purplish-blue, rarely white. — Var. GRACILIS (L. gracilis, *Nutt.*) is a more slender and hairy form, with smaller and narrower, often acute leaflets. — Dry sandy soil, Florida to Mississippi, and northward. April and May. ♃ — Stem 1° – 1½° high.

2. **L. villosus,** Willd. — Biennial ; villous and hoary ; stems thick, prostrate or ascending ; leaves simple, lanceolate-oblong, mostly acute, long-petioled ;

stipules linear-subulate, elongated, adnate below to the petioles; racemes erect, densely many-flowered; flowers pale red, the vexillum dark purple in the centre; legume very woolly. — Dry sandy barrens, Florida to North Carolina. April. — Stems 1° – 2° long. Leaves (with the petiole) 6′ – 8′ long.

3. **L. diffusus,** Nutt. Perennial; silky-tomentose and hoary; stems prostrate or erect, much branched; leaves simple, oblong or obovate, obtuse, short-petioled; stipules short, often wanting on the branches; racemes many-flowered; flowers blue, the vexillum dark purple in the centre; legume woolly. — Dry sand-ridges, Florida to North Carolina. April and May. — Stems 1° – 2° high. Leaves 2′ – 4′ long.

3. MEDICAGO, L.

Calyx 5-cleft; the lobes subulate or setaceous. Corolla deciduous. Vexillum longer than the partly united wings and keel. Stamens 10, diadelphous (9 & 1), equal. Style smooth. Legume falcate or coiled, 1 – many-seeded. — Herbs or shrubs. Leaves trifoliolate. Stipules adnate to the petioles, mostly incised. Flowers yellow, in axillary spikes.

1. **M. lupulina,** L. Pubescent; stem procumbent; leaflets obovate, toothed; stipules nearly entire; spikes globose, many-flowered; flowers minute; legumes reniform, 1-seeded, black. — Waste places, Florida and northward. Introduced. ① — Stem 1° – 2° long.

4. MELILOTUS, Tourn. Melilot. Sweet Clover.

Calyx 5-toothed; the teeth long and equal. Corolla deciduous. Wings and keel cohering. Stamens diadelphous (9 & 1). Legume ovoid, coriaceous, veiny or rugose, longer than the calyx, 1 – 4-seeded, scarcely dehiscent. — Smooth herbs. Leaves trifoliolate. Leaflets often toothed. Stipules adnate to the petioles. Flowers yellow or white, in axillary racemes.

1. **M. officinalis,** Willd. Stem erect, branching; leaflets obovate-oblong, toothed; flowers yellow; vexillum striped with brown, as long as the keel and wings; legume obovate, rugose. — Cultivated ground. Introduced. ① and ② — Stems 1° – 3° high. Legumes drooping, 2-seeded.

2. **M. alba,** Lam. Stem erect, branching; leaflets oblong, truncate, serrate; racemes elongated; flowers white; vexillum longer than the wings and keel; legumes ovate, rugose, 1-seeded. (M. leucantha, *Koch.*) — Cultivated grounds. Introduced. ② — Legumes drooping.

5. TRIFOLIUM, L. Clover.

Calyx 5-cleft; the teeth subulate or setaceous. Corolla withering or persistent; the keel shorter than the wings, and united with them by their claws. Stamens diadelphous (9 & 1). Legume smooth, membranaceous, 1 – 6-seeded, often shorter than the calyx, scarcely dehiscent. — Tufted or diffuse herbs. Leaves trifoliolate, the leaflets mostly toothed. Stipules adnate to the petioles. Flowers (in our species) capitate.

** Fruiting calyx erect.*

1. **T. pratense,** L. (RED CLOVER.) Hairy; stems erect; leaflets oblong-ovate or oval, often emarginate, slightly serrulate; heads large, ovate; calyx-teeth setaceous, hairy; flowers purple. — Around dwellings. Introduced, but scarcely naturalized, at least in the low country. — Stems 1° – 2° high. Leaves usually marked with a pale 3-angled spot above.

2. **T. arvense,** L. (RABBIT-FOOT CLOVER.) Softly pubescent; stems erect; leaflets linear-oblong, minutely 3-toothed; heads oblong; calyx-teeth setaceous, plumose; corolla white, with a purple spot on the wings. — Old fields, chiefly in the upper districts. Introduced. ① — Stems 8′ – 12′ high.

** * Fruiting calyx reflexed.*

3. **T. reflexum,** L. (BUFFALO CLOVER.) Pubescent; stems ascending; leaflets roundish or obcordate, toothed, the uppermost oblong; heads globose; calyx-tube very short, the subulate teeth long and hairy; vexillum broadly ovate, purple; the wings and keel white; legume 3 – 5-seeded. — Waste places and pastures, Florida to North Carolina, and northward. April and May. ① and ② — Stems 6′ – 12′ long. Heads large.

4. **T. repens,** L. (WHITE CLOVER.) Smooth; stems creeping; leaflets roundish or obcordate; heads globose, long-peduncled; calyx-teeth short; flowers white; legume 4-seeded. — Pastures and around dwellings. Introduced. May. ♃ — Stems 6′ – 12′ long.

5. **T. procumbens,** L. Pubescent; stems slender, erect or procumbent; leaflets small, thin, obovate or obcordate, toothed, the middle one stalked; heads small, ovate; flowers yellow; legume 1-seeded. — Waste places; more common in the upper districts. Introduced. ① — Stems 6′ – 12′ long.

6. **T. Carolinianum,** Michx. Pubescent; stems tufted, prostrate; leaflets small, obcordate, slightly toothed; heads roundish, long-peduncled; flowers white, tinged with purple; vexillum acute; legume 4-seeded. — Fields and pastures, Florida to North Carolina, and westward. March and April. ♃ — Stems 6′ – 10′ long; in shady places erect.

6. HOSACKIA, Dougl.

Calyx 5-cleft. Vexillum as long as the keel and spreading wings. Stamens diadelphous (9 & 1). Legume cylindrical or compressed, smooth, wingless, many-seeded. — Herbs. Leaves trifoliolate or pinnate. Stipules mostly minute and gland-like. Peduncles 1 – several-flowered.

1. **H. Purshiana,** Benth. Hairy; stem much branched; leaves trifoliolate, with oblong leaflets; peduncle 1-flowered, longer than the leaves; keel acute; bracts simple; legume linear, nearly terete. — North Carolina. — Stem 12′ – 15′ high. Flowers rose-color.

7. PSORALEA, L.

Calyx campanulate, 5-cleft, with the lobes acute. Stamens diadelphous or partly monadelphous: half of the anthers often imperfect. Legume often

wrinkled, 1-seeded, indehiscent, included in the calyx. — Perennial usually glandular herbs. Stipules cohering with the petioles. Flowers axillary or terminal, purplish or white, racemose or spiked.

* *Leaves* 1 – 3-*foliolate.*

1. **P. virgata,** Nutt. Smoothish; stem virgate, sparingly branched; leaves very remote, 1- (or the lowest 2 – 3-) foliolate; leaflets linear or oblong-linear, obtuse, the lower ones broader and long-petioled; stipules setaceous; peduncles much shorter than the leaves; spikes dense, cylindrical; bracts ovate, acuminate, and, like the calyx, glandular and hairy; corolla violet. — Near St. Mary's, Georgia, and the adjacent parts of Florida. July. — Stem 2° high. Leaflets 2′ – 5′ long.

2. **P. melilotoides,** Michx. Glandular and sparingly pubescent; leaves trifoliolate; leaflets oblong-lanceolate or elliptical; stipules subulate; spikes oblong, on peduncles 2 – 3 times as long as the leaves; bracts ovate, acuminate, veiny; corolla violet; legume rugose. — Var. 1. (P. eglandulosa, *Ell.*) Glandless or nearly so; bracts ovate-lanceolate, and, like the calyx, villous. — Dry soil, Florida to Tennessee, and westward. May and June. — Stem 1° – 2° high. Leaflets 1′ – 2′ long.

3. **P. Onobrychis,** Nutt. Pubescent; leaves trifoliolate; leaflets ovate, acuminate; racemes elongated, somewhat secund; calyx glandular, the teeth small, obtuse, equal; legume ovate, muricate, wrinkled transversely. — Near Spartanburg, South Carolina. June and July. — Stem 3° – 5° high. Leaves very large.

4. **P. canescens,** Michx. Hoary-pubescent; lower leaves trifoliolate, the upper simple, short-petioled; leaflets obovate, glandular; racemes longer than the leaves, few-flowered; calyx inflated; flowers blue, turning greenish; legume even. — Dry pine barrens, Florida to North Carolina. April and May. — Stem bushy, 2° high. Resembles a Baptisia.

* * *Leaves palmately* 5 – 7-*foliolate.*

5. **P. Lupinellus,** Michx. Smooth; stem slender, declining, sparingly branched; leaflets filiform; racemes longer than the leaves, loose-flowered; flowers violet; legumes rugose. (P. Floridana, *Shuttl.*) — Dry pine barrens, Florida to North Carolina. May and June. — Stem 2° long. Leaflets 2′ – 3′ long.

6. **P. subacaulis,** Torr. & Gray. Nearly stemless; peduncles, petioles, and calyx white with spreading hairs; leaves 7-foliolate, long-petioled; leaflets obovate-oblong, smoothish above, fringed on the margins and midrib beneath; peduncles longer than the leaves, rigid; spikes dense, ovate or oblong; bracts ovate, acuminate; calyx-teeth obtuse. — Rocky hills, near Nashville, Tennessee. April and May. — Leaflets 1′ long. Peduncles 4′ – 6′ long. Flowers numerous, purple.

* * * *Leaves pinnate.*

7. **P. multijuga,** Ell. Stem branching; leaflets numerous (9 – 10 pairs), oblong-lanceolate, obtuse, pubescent; spikes oblong; bracts small, membranaceous, without glands. — Abbeville District, South Carolina. — Stem 1° – 2° high. Leaflets small. Bracts half as long as the calyx. Flowers violet.

8. PETALOSTEMON, Michx.

Calyx nearly equally 5-toothed or 5-cleft. Petals almost regular, on filiform claws, four of them united with the tube of stamens, the fifth free, cordate or oblong, folded. Stamens 5, united into a cleft tube. Ovary 2-ovuled. Legume indehiscent, 1-seeded, included in the calyx. — Perennial glandular herbs, with unequally pinnate leaves, and white or purple flowers in terminal spikes or heads.

* *Spikes solitary.*

1. **P. gracile,** Nutt. Stems decumbent, virgate; leaflets 5 – 7, oblong-linear, obtuse; spikes oval, becoming cylindrical in fruit, peduncled; vexillum broadly cordate — Low pine barrens, Florida and westward. August. — Stems 2° long. Leaflets $\frac{1}{2}'$ long. Flowers white.

2. **P. carneum,** Michx. Stems erect, much branched, very leafy; leaflets 5 – 7, linear, acute; spikes oblong, long-peduncled; vexillum oblong. — Dry sandy soil. Florida and Georgia, westward. — Stems 2° – 3° high. Flowers white or reddish.

* * *Spikes corymbose.*

3. **P. corymbosum,** Michx. Stems clustered, erect, very leafy; leaflets 3 – 7, filiform; teeth of the calyx setaceous, plumose; vexillum oblong. — Varies with more numerous (11 – 15) oblong leaflets which are commonly emarginate at the apex. — Dry pine barrens, Florida to North Carolina, and westward; the variety in the low country of South Carolina, *Curtis*. Sept. and Oct. — Stems 2° high. Flowers white.

9. DALEA, L.

Calyx 5-cleft. Corolla imperfectly papilionaceous; petals clawed; four of them united with the tube of stamens below the middle, the fifth (vexillum) free, cordate, and inserted into the bottom of the calyx. Stamens 10, united into a cleft tube. Legume 1-seeded, membranaceous, indehiscent, included in the calyx. — Mostly glandular herbs, with spiked or capitate flowers.

1. **D. alopecuroides,** Willd. Stem erect, smooth; leaves pinnate, with numerous linear-oblong leaflets; spikes dense, cylindrical, silky-villous; corolla small, pale violet, the vexillum white. — Rich soil, Alabama, northward and westward. July. — Stem 1° – 2° high.

10. AMORPHA, L.

Calyx obconical, 5-toothed, persistent. Vexillum straight, concave. Wings and keel none. Stamens monadelphous at the base, exserted. Legume 1 – 2-seeded, oblong, curved, glandular-roughened, indehiscent or nearly so. — Shrubs, with unequally pinnate leaves, and numerous leaflets which are punctate with pellucid dots. Flowers blue or white, in slender racemes or spikes.

1. **A. fruticosa,** L. Pubescent; leaves petioled; leaflets 15 – 21, oblong, obtuse or emarginate, sparingly dotted; flowers racemed, blue; calyx-teeth very short, nearly equal, pubescent; legume 1 – 2-seeded. — Banks of rivers, Florida

to Mississippi, and northward. May and June. — Shrub 6° – 15° high. Leaflets 1′ – 1½′ long. Racemes mostly panicled.

2. **A. herbacea,** Walt. Pubescent or glabrous; leaves short-petioled; leaflets 15 – 35, rigid, oval or oblong, conspicuously dotted; racemes spicate, single or panicled; calyx-teeth villous; the two upper ones short and obtuse, the lower more or less elongated and acute; legume 1-seeded. (A. pumila, *Michx.* A. pubescens, *Willd.* A. Caroliniana, *Croom.*) — Low pine barrens, Florida to North Carolina, and westward. June and July. — Shrub 2° – 4° high, with purple branches. Leaflets smaller and more crowded than in No. 1. Flowers blue or white.

3. **A. canescens,** Nutt. Hoary-tomentose; leaves sessile; leaflets numerous, small, elliptical, crowded; spikes short, panicled, dense-flowered; calyx-teeth acute, nearly equal; legume 1-seeded. — Near Augusta, Georgia, and westward. July and August. — Shrub 1° – 2° high. Flowers bright blue.

11. ROBINIA, L. Locust.

Calyx short, 5-toothed or 5-cleft, the two upper teeth shorter and more or less united. Vexillum large, roundish; keel obtuse. Stamens diadelphous (9 & 1). Style bearded on the side facing the vexillum. Legume compressed, many-seeded, the seed-bearing suture margined. Seeds flat. — Trees or shrubs, often with stipular spines, unequally pinnate leaves, and showy white or rose-colored flowers in axillary racemes.

1. **R. Pseudacacia,** L. (Locust. False Acacia.) Smoothish; spines small on the older branches, straight; leaflets 9 – 17, oblong-ovate, or elliptical; racemes pendulous, oblong, many-flowered; flowers white; legume 4 – 6-seeded. — Rich soil, in the upper districts. April and May. — A tree 30° – 60° high, with hard and durable wood. Racemes 3′ – 5′ long. Calyx spotted. Legume smooth. Flowers fragrant.

2. **R. viscosa,** Vent. Branches, petioles, peduncles, and legumes glandular-viscid; spines very small; leaflets 11 – 25, ovate and oblong, obtuse or slightly cordate at the base, paler and pubescent beneath, tipped with a short bristle; flowers crowded in roundish erect racemes, rose-color; legume 3 – 5-seeded. — Banks of streams, on the mountains of Georgia and Carolina. May and June. — A tree 20° – 40° high. Flowers inodorous.

3. **R. hispida,** L. Branches, &c. more or less bristly; stipules very slender and bristle-like, deciduous; leaflets 11 – 18, smooth, ovate or oblong-ovate, rounded or slightly cordate at the base, tipped with a long bristle; flowers large, in a loose and mostly pendulous raceme, bright rose-color. — Mountains of Georgia and North Carolina, both the ordinary form and the var. rosea, *Pursh*, with pubescent branches and few-flowered racemes. May. — Shrub 3° – 8° high.

Var. **Elliottii.** Branches, &c. pubescent; stipular spines very stout, spreading or recurved. (R. hispida, var. rosea, *Ell.*) — Pine barrens in the central parts of Georgia and southward. — Shrub 3° – 5° high, with thick and rigid branches. A still smaller form, scarcely a foot high (var. nana, *Ell.*), is found at Columbia, South Carolina.

12. WISTARIA, Nutt.

Calyx campanulate, somewhat 2-lipped; the upper lip broad, 2-cleft, the lower 3-cleft. Vexillum large, with 2 parallel ridges at the base. Stamens diadelphous (9 & 1). Legume coriaceous, nearly terete, contracted between the seeds, at length 2-valved. — Twining shrubs, with unequally pinnate leaves, and showy purple flowers, in a crowded raceme.

1. **W. frutescens,** DC. Young leaves and branches silky-pubescent; leaflets 9 – 13, ovate-lanceolate or oblong; stipels none; racemes on short branches, dense-flowered. (Thyrsanthus frutescens, *Ell.*) — Margins of swamps, Florida to North Carolina, and west to Mississippi. April and May. — Leaflets 1′ long. Racemes 4′ – 6′ long, 2′ – 3′ in diameter. Legume 1 – several-seeded. Bracts large, caducous.

13. TEPHROSIA, Pers.

Calyx nearly equally 5-cleft or 5-toothed. Vexillum large, roundish, spreading or reflexed, usually white within, and reddish or purple and silky without; keel obtuse, cohering with the wings. Stamens monadelphous or diadelphous. Style smooth or laterally bearded. Legume compressed, linear, many-seeded. — Perennial herbs, with unequally pinnate leaves, with the leaflets opposite mucronate and straight-veined, and white or purplish flowers.

* *Flowers single or by pairs in the axils of the leaves; the uppermost often crowded in a dense raceme.*

1. **T. Virginiana,** Pers. (Goat's Rue.) Soft-hairy and somewhat hoary; stems very leafy, clustered, erect, simple; leaflets 11 – 25, oblong or linear-oblong, acute or obtuse, smoothish above; flowers yellowish-white tinged with purple. — Dry pine barrens, Florida to Mississippi, and northward. June and July. — Stems 1° – 2° high, from long and slender roots. Flowers showy.

* * *Flowers in long-peduncled racemes opposite the leaves: vexillum pubescent externally.*

2. **T. spicata,** Torr. & Gray. Hirsute or villous with rusty hairs; stems simple or diffusely branched; leaves scattered, short-petioled; leaflets 9 – 15, oval or cuneate-oblong, rounded and strongly mucronate at the apex, smoothish above; racemes 2 – 3 times as long as the leaves, 6 – 10-flowered; lobes of the calyx linear-subulate; flowers large, white and purple. (T. paucifolia, *Nutt.* Galega villosa, *Michx.*) Varies with linear, acute, and reflexed leaflets, the odd one elongated. — Dry soil, Florida to North Carolina, and westward. June and July. — Stems 1° – 2° long.

3. **T. hispidula,** Pursh. Hoary-pubescent or smoothish; stems slender, terete, erect or procumbent; petiole shorter than the lowest leaflets; leaflets 11 – 15, small (4″ – 6″ long), oblong, acute or obtuse, often smooth above; peduncles slender, terete, commonly longer than the leaves, 2 – 4-flowered; flowers small, purple. — Dry sandy soil, Florida to North Carolina, and westward. June and July. — Stems 6′ – 18′ long.

4. **T. chrysophylla,** Pursh. Prostrate, rusty pubescent; stems diffusely branched; leaves sessile or nearly so, short (1′ – 1¾′ long); leaflets (yellowish)

5 – 7, cuneate-obovate, obtuse or emarginate, smooth above; peduncles longer than the leaves, terete, 2 – 3-flowered; calyx-teeth short, acute. — Varies with smaller ($\frac{1}{2}'$ – 1′ long) leaves and flowers, the latter mostly solitary on the short peduncles. — Dry pine barrens, Florida, Georgia, and westward. — Stems 6′ – 18′ long.

5. **T. ambigua,** M. A. Curtis. Hoary-pubescent, or nearly smooth; stems decumbent, angled; leaves scattered, long-petioled (5′ – 6′ long); leaflets 7 – 15, distant, wedge-oblong, truncate or emarginate at the apex, paler and often smooth above, purplish and strongly veined beneath; peduncles flattened, equalling or exceeding the leaves, few-flowered; calyx-teeth short, acute; flowers white and purple. — Dry sandy soil, Florida to North Carolina. June and July.

6. **T. angustissima,** Shuttl. Smooth or nearly so throughout; stems slender, prostrate, diffusely branched; leaves short-petioled; leaflets 10 – 15, linear, acute, mostly opposite; racemes very slender, longer than the leaves, bearing 2 – 4 small scattered flowers; calyx slightly pubescent, with triangular-ovate acute teeth. — South Florida, *Rugel.* — Stem 1° long. Leaflets 8″ – 12″ long, 1″ wide, spreading. Corolla about 3″ long.

14. INDIGOFERA, L. Indigo.

Calyx 5-cleft. Vexillum roundish. Keel with a subulate spur on each side, often elastically reflexed. Stamens diadelphous (9 & 1). Legume 1 – many-seeded. Seeds usually truncated at each end, often separated by membranaceous partitions. — Herbs with unequally pinnate leaves, and white, brownish, or purplish axillary flowers. Legumes drooping.

* *Racemes longer than the leaves. — Indigenous species.*

1. **I. Caroliniana,** Walt. Smoothish; stem erect, tall, branching; leaflets 10 – 15, obovate or oblong; racemes many-flowered; calyx-teeth short, acute; flowers yellowish-brown; legume oblong, veiny, 2-seeded. — Dry pine barrens, Florida to North Carolina. July and August. ♃ — Stem 3° – 5° high. Flowers small. Legume 4″ – 5″ long.

2. **I. leptosepala,** Nutt. Rough hairy; stem decumbent; leaflets 7 – 9, obovate-oblong or cuneate; racemes 6 – 15-flowered; calyx-teeth slender-subulate; flowers pale-scarlet; legume linear, even, 6 – 9-seeded. — Georgia, *Nuttall,* South Florida, *Blodgett,* and westward. — Stem 2° – 3° long. Legume 1½′ long, straight.

* * *Racemes shorter than the leaves. — Introduced species.*

3. **I. tinctoria,** L. Stem erect; leaflets 9 – 11, oval, pubescent beneath; legume terete, torulose, curved. — Waste places. August.

4. **I. Anil,** L. Stem erect; leaflets 7 – 15, oval; legume compressed, even, thickened at each suture. — Waste places.

These two species were formerly cultivated in some of the States, and employed in the manufacture of indigo.

15. GLOTTIDIUM, Desv.

Calyx campanulate, obliquely truncate, 5-toothed. Vexillum short, reniform. Stamens diadelphous (9 & 1). Style short, incurved at the apex. Stigma acute. Legume oblong, stipitate, compressed; the membranaceous endocarp at length separating from the coriaceous epicarp, and enclosing the two oblong seeds. — A tall smooth-branching annual, with abruptly pinnate leaves, and yellow flowers in axillary often compound racemes.

1. **G. Floridanum,** DC. (Sesbania vesicaria, *Spreng.*) — Damp soil, Florida to South Carolina, and westward. August. — Stem 2° – 8° high. Leaflets numerous, oblong-linear. Legume 1′ – 2′ long. Plant yellowish-green.

16. SESBANIA, Pers.

Calyx 2-bracted, campanulate, equally 5-toothed. Vexillum roundish. Keel obtuse. Stamens diadelphous (9 & 1); the tube toothed at the base. Legume slender, elongated, knotted. — Herbs or shrubs. Leaves abruptly pinnate. Leaflets numerous. Flowers yellow or reddish, in axillary racemes.

1. **S. macrocarpa,** Muhl. Annual, smooth; leaflets oblong-linear, obtuse, mucronate; racemes shorter than the leaves, 1 – 4-flowered; legume curved, compressed, 4-sided, many-seeded. — Swamps, Florida to South Carolina, and westward. August and September. — Stem 5° – 12° high. Legume 8′ – 12′ long, pendulous. Flowers yellow and red, dotted with purple.

17. ASTRAGALUS, L. Milk-Vetch.

Calyx 5-toothed; the 2 upper teeth separated. Vexillum as long as the wings and obtuse keel. Stamens 10, diadelphous. Legume commonly turgid, few – many-seeded, usually partly or completely 2-celled by the introversion of one or both of the sutures. — Herbs with unequally pinnate leaves, and axillary spiked or racemose flowers.

* *Legume partly or completely 2-celled by the introversion of the dorsal suture.*

1. **A. Canadensis,** L. Tall, pubescent; leaflets 21 – 31, oblong, obtuse; stipules ovate, clasping; peduncles as long as the leaves, closely many-flowered; calyx-teeth subulate; legume inflated, oval, terete, 2-celled. — Mountains of Georgia and North Carolina, and northward. June – August. ♃ — Stem 2° – 3° high. Leaflets 1′ – 1½′ long. Flowers ¾′ long, pale yellow.

2. **A. glaber,** Michx. Stem tall, nearly smooth; leaflets 15 – 25, oblong-linear, pubescent beneath; stipules minute, spreading; spikes longer than the leaves, loosely many-flowered; calyx-teeth broad and short; legume curved, oblong, flattened edgewise, 2-celled. — Dry pine barrens, Florida to North Carolina. April. ♃ — Stem 2° high. Leaflets 6″ – 8″ long. Flowers white.

3. **A. obcordatus,** Ell. Smoothish; stems prostrate; leaflets small, 17 – 25, obcordate; peduncles as long as the leaves, loosely 8 – 15-flowered; legumes crescent-shaped, compressed, veiny, partly 2-celled. — Dry sandy barrens, Florida, and the lower parts of Georgia. April – June. ♃ — Stems 6′ – 12′ long. Leaflets 3″ – 4″ long. Flowers pale purple.

4. **A. Tennesseensis,** Gray. Villous with white hairs; stems prostrate or ascending; leaflets about 20, oblong or linear-oblong, obtuse or emarginate, smooth above, more or less hairy beneath; stipules ovate-lanceolate, adnate to the petioles; peduncles as long as the leaves; racemes somewhat capitate, 10 – 15-flowered; calyx-teeth subulate, much shorter than the tube; legume oblong, curved, thick and fleshy, reticulate-rugose when dry, 2-celled, many-seeded, at length smoothish. — Hills near Nashville, Tennessee, *Lesquereux*, and Lagrange, Alabama, *Prof. Hatch*. March and April. ♃ — Stems 4′ – 6′ long. Flowers 8″ – 9″ long, apparently purple.

* * *Legume 1-celled; the ventral suture thickened and sometimes slightly inflexed.*

5. **A. villosus,** Michx. Villous and hoary; stems prostrate; leaflets about 13, oval or oblong, commonly emarginate; stipules lanceolate, peduncles as long as the leaves; racemes ovate, dense-flowered; calyx-teeth longer than the tube· legume oblong, curved, 3-angled, even, 1-celled. (Phaca villosa, *Nutt.*) — Dry pine barrens, Florida to South Carolina. April and May. ♃ — Stems 4′ – 6′ long. Flowers small, dull yellow.

18. VICIA, Tourn. Vetch. Tare.

Calyx tubular, 5-cleft, the two upper teeth usually shorter. Style filiform, hairy at the apex, or on the side facing the keel. Legume 2 – many-seeded, 2-valved. Seeds orbicular. Cotyledons thick. — Slender climbing herbs. Leaves pinnate; the petiole terminating in a tendril. Stipules mostly semi-sagittate. Flowers axillary.

* *Peduncles shorter than the leaves, 1 – 2-flowered.*

1. **V. sativa,** L. (Vetch or Tare.) Pubescent; stem simple; leaflets 10 – 12, varying from obovate-oblong to linear, emarginate; flowers by pairs, nearly sessile, pale purple; legume linear, several-seeded. — Cultivated grounds. Introduced. ① — Corolla ½′ long. Stem 1° – 2° long.

2. **V. micrantha,** Nutt. Smooth; leaflets 4 – 6, linear, obtuse or barely acute; peduncles 1 – 2-flowered; flowers minute, pale blue; legume sabre-shaped, 4 – 10-seeded. — Banks of rivers and shaded places, West Florida to North Alabama, and westward. April. ① — Stems 2° – 3° long. Seeds black.

* * *Peduncles commonly longer than the leaves, 3 – many-flowered.*

3. **V. hirsuta,** Koch. Hairy; leaflets 12 – 14, oblong-linear, truncate; peduncles 3 – 6-flowered, about as long as the leaves, calyx-teeth equal; flowers small, bluish-white; legume short, oblong, 2-seeded. (V. Mitchelli, *Raf.* Ervum hirsutum, *L.*) — Cultivated ground. Introduced. April and May.

4. **V. acutifolia,** Ell. Smooth; leaflets about 4, linear or rarely oblong, acute or truncate; peduncles 4 – 8-flowered, usually longer than the leaves; flowers pale blue, the keel tipped with purple; legume linear, 4 – 8-seeded. — Damp soil near the coast, Florida and Georgia. March – May. ♃ — Stems angled, 2° – 4° long, branching.

5. **V. Caroliniana,** Walt. Smoothish; leaflets 8 – 12, linear or linear-oblong, obtuse or barely acute; stipules small, subulate; peduncles many-flow-

ered; calyx-teeth shorter than the tube; flowers nearly white, the keel tipped with blue; legume oblong, several-seeded. — Dry open woods, chiefly in the upper districts. April and May. ♃ — Stems 3° – 4° long, branching. Flowers 4″ – 6″ long.

19. LATHYRUS, L.

Style flattened, bearded on the side facing the vexillum. Otherwise as in Vicia.

1. **L. pusillus,** Ell. Annual; leaflets 2, linear-lanceolate, acute; stipules sagittate; peduncles elongated, 1 – 2-flowered; teeth of the calyx subulate-setaceous, nearly equal; legume long, 10 – 15-seeded. — Near Charleston, South Carolina, and westward. May. — A small and slender vine. Flowers purple.

2. **L. venosus,** Muhl. Perennial; stem stout; leaflets 10 – 14, oblong-ovate, obtuse; stipules lanceolate; peduncles 10 – 20-flowered; flowers large, purple; calyx-teeth very unequal. — Shady banks, Georgia to Mississippi, and northward. June and July. — Stem angled, 2° – 3° long. Leaflets 2′ – 3′ long. Flowers ¾′ long.

3. **L. myrtifolius,** Muhl. Perennial; stem slender, 4-angled; leaflets 4 – 6, oblong, obtuse; stipules large, ovate, entire; peduncles 3 – 6-flowered; flowers pale purple; calyx-teeth unequal. — Banks of rivers, North Carolina, and northward. July and August. — Stem 2° – 4° long, often wing-angled. Leaflets 1½′ long.

20. ÆSCHYNOMENE, L.

Calyx 2-lipped, 5-cleft or 5-toothed. Petals equal: vexillum roundish. Stamens diadelphous (5 & 5). Legume compressed, stipitate, separating transversely into 3 or more 1-seeded indehiscent joints. — Herbs or shrubs, with pinnate leaves, and axillary yellow flowers.

1. **Æ. hispida,** Willd. Annual; stem erect, muricate-hispid; leaflets numerous, oblong-linear; peduncles 3 – 5-flowered; legume straight, linear, even along the upper suture, wavy on the lower, 6 – 10-jointed, the joints nearly square, hispid. — Swamps, Florida to Mississippi, and northward. August. — Stem 2° – 4° high.

2. **Æ. viscidula,** Michx. Annual; stem slender, prostrate, viscid-pubescent; leaves small; leaflets 7 – 9, obovate, reticulate-veined; peduncles 3 – 4-flowered, the pedicels long and spreading; stipules and bracts ovate; legume 2 – 3-jointed, the joints half-orbicular, hispid. — Sandy places along the coast, Florida and Georgia. August and Sept. — Stem 1° – 2° long. Leaves 1′ long. Flowers small.

21. ZORNIA, Gmel.

Calyx 2-lipped, the upper lip emarginate, the lower 3-cleft. Corolla inserted into the base of the calyx. Stamens monadelphous, alternately shorter: anthers alternately oblong and globose. Legume compressed, with 2 – 5 roundish hispid joints. — Herbs. Leaves palmately 2 – 4-foliolate. Stipules sagittate. Flowers yellow, in axillary large-bracted racemes.

1. **Z. tetraphylla,** Michx. Perennial, smooth or downy; leaflets 4, lanceolate or oblong-obovate; racemes 3–9-flowered, much longer than the leaves; the flowers distant and almost concealed by the large ovate bracts; legume hispid, 3–4-jointed. — Dry sandy soil, Florida to North Carolina, and westward. June – August. — Stem 2° long, prostrate.

22. STYLOSANTHES, Swartz.

Flowers of two kinds: one kind perfect, but sterile; the other destitute of calyx, corolla, and stamens, and fertile. Calyx 2-bracted, 2-lipped, 5-cleft; the tube long and slender. Corolla inserted on the throat of the calyx. Keel entire at the apex. Stamens monadelphous, with the alternate anthers linear and ovate. Style of the fertile flower hooked. Legume veiny, 1–2-jointed, the lower joint empty. — Low herbs. Leaves trifoliolate. Stipules united with the petioles. Flowers in a short and dense terminal spike.

1. **S. elatior,** Swartz. Perennial; stem mostly erect, 6′–12′ high, pubescent in lines, or sometimes hispid; leaflets rigid, lanceolate, strongly veined; stipules sheathing; spike few-flowered; bracts bristly; flowers yellow. (S. hispida, *Michx.*) — Sandy pine barrens, Florida and northward. June – August.

23. CHAPMANNIA, Torr. & Gray.

Flowers nearly as in Stylosanthes. Corolla inserted on the throat of the calyx. Keel 2-cleft at the apex. Anthers alike, oblong. Legume hispid, 1–3-jointed. — A viscid and hirsute branching herb, with unequally pinnate leaves, small and free stipules, and small yellow flowers in terminal racemes.

1. **C. Floridana,** Torr. & Gray. — East Florida. May. — Stem slender, 2°–3° high. Leaflets 3–7, oblong. Racemes often branching, few-flowered.

24. LESPEDEZA, Michx. Bush-Clover.

Calyx 2-bracted, 5-cleft; the teeth subulate. Corolla inserted on the base of the calyx. Stamens diadelphous (9 & 1). Anthers alike. Legume small, lenticular, indehiscent, 1-seeded. — Perennial herbs, with trifoliolate leaves, and small flowers in axillary racemes or spikes.

* *Flowers of two kinds, viz. perfect, but mostly sterile, borne in spikes or racemes, and fertile, but destitute of corolla and stamens; the latter commonly in sessile clusters: corolla purple, longer than the calyx.*

1. **L. repens,** Torr. & Gray. Stem slender, prostrate; leaflets small, oval, mostly emarginate, the petiole very short, or as long as the lateral leaflets; racemes few-flowered, on filiform peduncles much longer than the leaves; legume roundish. (L. procumbens, *Michx.*) — Dry sandy soil, Florida to Mississippi, and northward. August. — Plant 1°–2° long, smooth or tomentose.

2. **L. violacea,** Pers. Stem erect or spreading; leaflets varying from elliptical to linear, pubescent with appressed hairs beneath; fertile flowers in axillary clusters; legume ovate, smooth, or with scattered appressed hairs, much longer than the calyx.

Var. **divergens.** (L. divergens, *Pursh.*) Stems diffuse; leaflets oval or oblong; peduncles filiform, few-flowered, longer than the leaves, and bearing chiefly sterile flowers.

Var. **sessiliflora.** (L. sessiliflora, *Michx.* L. violacea, *Ell.*) Stem erect; leaflets oblong; flowers mostly fertile, in dense and nearly sessile clusters which are much crowded near the summit of the branches.

Var. **reticulata.** (L. reticulata, *Pers.*) Stem erect; leaves linear-oblong; flowers clustered as in the preceding variety.

Dry barren soil, Florida to Mississippi, and northward. August. — Stem 2° – 3° high. Leaflets pale beneath. Corolla twice as long as the calyx.

3. **L. Stuvei,** Nutt. Stem erect, branching, softly-pubescent; leaflets oval or roundish, tomentose or silky on both surfaces, or only beneath, longer than the petiole; racemes axillary, mostly longer than the leaves; flowers nearly all perfect and fertile; legume longer than the calyx, ovate, villous. — Dry sterile soil, Mississippi to North Carolina, and northward. August. — Intermediate between No. 2 and No. 4.

* * *Flowers all perfect and fertile: corolla as long as the calyx, yellowish-white, the vexillum spotted with purple: legume included in the calyx.*

4. **L. hirta,** Ell. Stem erect, pubescent or villous; leaflets oval or roundish, longer than the petiole, pubescent beneath or on both sides; spikes dense, on peduncles longer than the leaves; calyx-teeth linear-lanceolate, as long as the ovate pubescent legume. — Dry barren soil, Florida to Mississippi, and northward. August. — Stem 2° – 4° high.

5. **L. capitata,** Michx. Stem mostly simple, softly pubescent, erect; leaves short-petioled; leaflets varying from oblong to linear, silky on both sides, or only beneath; calyx hairy, longer than the oval villous legume. (L. frutescens and L. angustifolia, *Ell.*) — Dry or damp sterile soil, Florida to Mississippi, and northward. August. — Stem 2° – 4° high.

25. DESMODIUM, DC. (HEDYSARUM, L., Ell.)

Flowers all similar and perfect. Calyx bilabiate; the upper lip emarginate or entire, the lower 3-cleft. Corolla inserted on the base of the calyx. Stamens diadelphous (9 & 1), or more or less monadelphous. Legume flattened, 2 – 6-jointed. — Chiefly perennial branching herbs. Leaves trifoliolate, petioled, stipulate; the leaflets petiolulate and stipellate. Flowers small, purple or whitish, in terminal racemes or panicles. Legumes hispid with hooked hairs.

§ 1. *Stamens monadelphous below: legumes conspicuously stipitate, 2 – 4-jointed, the joints half-obovate, concave on the back.*

1. **D. pauciflorum,** Nutt. Stem low, ascending, mostly simple, leafy; leaves scattered, long-petioled; leaflets thin, acute, ciliate, pale beneath, the lateral ones ovate, the terminal one rhombic-ovate; stipules minute; racemes terminal, 4 – 8-flowered, mostly shorter than the leaves. — Shady woods, Florida to Tennessee, and northward. August. — Stem 1° high. Leaflets 1′ – 2′ long. Corolla pale-purple or white.

2. **D. acuminatum,** DC. Stem pubescent, leafy at the summit; leaves large, long-petioled; leaflets smoothish, ovate or roundish, acuminate; raceme or panicle terminal, long-peduncled, many-flowered. — Rich shady soil, Florida to Mississippi, and northward. July and August. — Plant 2° – 3° high. Leaflets thin, 2′ – 4′ long.

3. **D. nudiflorum,** DC. Stem smooth, short, leafy at the summit; panicle ascending from the base of the stem, naked, or with one or two leaves near the base, much longer than the stem; leaves long-petioled, smooth; leaflets ovate, acute or obtuse, white beneath; legume long-stipitate. — Rich woods, Florida to Mississippi, and northward. July and August. — Stem 6′ – 12′ high. Racemes simple or compound, on peduncles 2° – 3° high.

§ 2. *Stamens diadelphous: legume sessile or short stipitate.*

* *Stipules large, ovate (except No. 8), acuminate, persistent: legume 3 – 6-jointed, the joints convex on the upper suture, rounded on the lower one.*

4. **D. canescens,** DC. Stem tall, rough-hairy, striate; leaflets ovate, mostly acute, very rough, especially beneath; panicle large, very hairy; bracts large, ovate, acuminate; joints of the legume 3 – 5, connected by a broad neck. (Hedysarum scaberrimum, *Ell.*) — Dry open woods, Florida to Mississippi, and northward. July and August. — Plant 3° – 5° high, much branched, pale green. Leaflets 1½′ – 3′ long. Flowers large.

5. **D. molle,** DC.? Stem tall, much branched, softly pubescent; leaflets rhombic or elliptical, obtuse and often emarginate, tomentose beneath, rough above; racemes panicled, slender; flowers 2 – 3 together, on slender pedicels; legume nearly sessile, black; the small joints oval or rhombic, equally convex on both sutures. — Waste places, Middle Florida. Sept. — Stem 3° – 5° high. Leaflets 3′ – 4′ long. Legume 1′ long, pendulous. Flowers small.

6. **D. cuspidatum,** Torr. & Gray. Stem smooth, erect; leaves smooth, ovate or lanceolate-ovate, acuminate; panicle mostly simple, elongated; flowers and bracts large; legume 4 – 6-jointed, the joints rhombic-oblong, connected by a broad neck. (H. bracteosum, *Michx.*) — Dry open woods, Florida to Mississippi, and northward. July and August. — Stem 3° – 5° high. Leaflets 3′ – 5′ long. Legume 1½′ – 2′ long.

7. **D. viridiflorum,** Beck. Stem stout, tomentose, rough above; leaves large; leaflets ovate or roundish, obtuse, very rough above, pale and velvety beneath; stipules ovate, acuminate, rather small; panicle large, leafless; legume 3 – 4-jointed, on a stipe twice as long as the calyx, the joints half orbicular, connected by a narrow neck. — Rich open woods, Florida to Mississippi, and northward. August. — Stem 3° – 4° high. Leaflets 2′ – 4′ long. Corolla turning greenish.

8. **D. Floridanum,** n. sp. Stem short, rigid, very rough; lower leaves 1-foliolate; leaflets lanceolate-ovate, acute or obtuse, very rough above, pubescent and strongly reticulate beneath; stipules lance-subulate; panicle elongated, sparingly branched, leafless; legume 2 – 4-jointed, the stipe shorter than the calyx; joints obliquely obovate. — Dry sandy soil, Apalachicola, Florida. July and August. — Proper stem 1° high, the panicle 2° – 3°. Leaflets 2′ – 3′ long, the stipules and stipels rigid. Bracts and flowers small.

9. **D. rotundifolium,** DC. Stem long, trailing, hairy; leaflets orbicular, pubescent; stipules ovate, large, reflexed; racemes simple, the terminal ones panicled; lobes of the calyx longer than the tube; legume 2 – 4-jointed, very adhesive, the large joints half-rhombic. — Dry open woods, Florida to Mississippi, and northward. August. — Stem 3° – 5° long. Flowers showy, occasionally yellowish-white.

* * *Stipules subulate, deciduous: legume 3 – 5-jointed, nearly straight on the upper suture, the joints triangular, rarely rounded on the lower suture.*

10. **D. Canadense,** DC. Stem erect, hairy; leaves short-petioled; leaflets oblong-lanceolate, more or less hairy; panicle leafy; flowers and bracts large; legume with 3 – 4 rather large obtusely 3-angled joints. — Dry woods, North Carolina, and northward. August. — Stem 2° – 3° high, furrowed. Upper leaves subsessile.

11. **D. Dillenii,** Darl. Stem erect, furrowed, hairy; leaflets oblong or ovate-oblong, obtuse, smoothish above, paler and pubescent beneath; panicle large, leafless, rough; joints of the legume 3 – 4, triangular. (H. Marilandicum, *Ell.*) — Open woods, Florida and northward. August. — Stem 2° – 3° high. Leaflets 1′ – 2′ long. Bracts and flowers small.

12. **D. glabellum,** DC. Stem erect, nearly glabrous; leaflets small, ovate, obtuse, scabrous-pubescent on both sides; joints of the legume about 4, triangular, minutely hispid. — In shady places, North and South Carolina. — Resembles D. Marilandicum in foliage and D. paniculatum in fruit.

13. **D. lævigatum,** DC. Stem smooth, terete; leaflets thick, ovate, obtuse, smooth, or slightly pubescent and paler beneath; panicle leafless, rough; joints of the legume 3 – 4, triangular. (H. rhombifolium, *Ell.*) — Dry rich soil, Florida to Mississippi, and northward. August. — Stem 2° – 4° high. Leaflets 1′ – 2′ long, the lateral ones occasionally wanting.

14. **D. paniculatum,** DC. Stem slender, mostly smooth, with long and virgate branches; leaflets varying from oblong to linear-lanceolate, obtuse, smooth or slightly pubescent; legume 3 – 5-jointed, the joints triangular. — Shady woods, Florida to Mississippi, and northward. August. — Stem 2° – 4° high. Leaflets rather rigid.

* * * *Stipules subulate, deciduous: legume 2 – 3-jointed; the joints small, oval, or obliquely-obovate: flowers small.*

15. **D. tenuifolium,** Torr. & Gray. Stem slender, erect, rough-pubescent above; leaflets linear, reticulated, obtuse, smooth above, keeled, much longer than the short petiole; panicle leafless, very rough; flowers small; legume sessile, mostly 2-jointed. — Dry pine barrens, Florida to North Carolina. July and August. — Stem 2° – 3° high. Leaflets 2′ – 3′ long.

16. **D. strictum,** DC. Stem erect, mostly simple, straight and slender, smooth or roughish; leaves on slender petioles; leaflets narrowly linear, rather obtuse, coriaceous, reticulated, nearly smooth; panicle virgate, few-flowered; the pedicels very slender; legume stipitate, 1 – 3-jointed. — Pine barrens, Florida to Mississippi, and northward. July – Sept. — Stem 2° – 4° high. Leaflets 1½′ – 3′ long.

17. **D. Marilandicum,** Boott. Stem erect, smooth, mostly simple; leaflets small, ovate or roundish, obtuse, smooth, pale beneath, commonly shorter than the petiole; panicle rough; legume mostly 2-jointed. — (H. obtusum, *Ell.*) — Dry open woods, Florida and northward. August. — Stem 2° – 3° high. Leaflets rarely more than 1′ long, sometimes oblong.

18. **D. ciliare,** DC. Very much like No. 17, but the stem and leaves rough-hairy, and the (sometimes acute) leaflets longer than the short petiole. — With the preceding.

19. **D. rigidum,** DC. Stem erect, branched, rough-pubescent; leaflets (pale) oval or oblong, obtuse, rough above, hairy beneath, strongly reticulated on both sides; panicle ample, leafy below; legume mostly 3-jointed. — Dry woods, Florida to North Carolina, and northward. August. — Stems 2° – 3° high. Leaflets 1′ – 3′ long. Joints of the legume largest of this section.

20. **D. lineatum,** DC. Stem prostrate, slender, smooth; leaflets oval or roundish, smooth; racemes elongated, axillary and terminal, simple or paniculate, rough; legume 2 – 3-jointed. — Open grassy pine barrens, Florida to North Carolina, and westward. August. — Stem 1° – 2° long. Leaflets seldom more than 1′ long. Racemes 1° – 2° long.

26. RHYNCHOSIA, DC.

Calyx 2-lipped, with the upper lip 2-cleft and the lower 3-parted, or nearly equally 4-parted. Stamens diadelphous (9 & 1). Style smooth, subulate. Legume oblong or scymitar-shaped, mostly 1 – 2-seeded. Seeds carunculate. — Erect or twining herbs or shrubs, with 1 or 3-foliolate, mostly softly-pubescent and resinous-dotted leaves, and axillary yellow flowers.

* *Stems twining, or low and erect: flowers in axillary racemes.*

+– *Calyx somewhat 2-lipped, 4-cleft; the teeth subulate, shorter than the corolla, the lowest one longest: stems twining.*

1. **R. minima,** DC. Tomentose; leaflets small, roundish or broadly rhombic, barely acute, dotted beneath; stipules subulate; racemes filiform, much longer than the leaves, loosely 6 – 12-flowered; flowers minute, reflexed; legume scymitar-shaped. (Glycine reflexa, *Ell.*) — Damp soil along the coast, Key West to South Carolina, and westward. July. — Leaflets ½′ – 1′ long.

2. **R. parvifolia,** DC. Velvety throughout; leaflets ovate, oblong, or obovate-oblong, obtuse, or the upper ones acute, hoary and strongly reticulate beneath, longer than the petiole; stipules small, lanceolate; racemes equalling or longer than the leaves, slender, loosely 3 – 5-flowered; lowest tooth of the calyx nearly twice the length of the others; legume oblong, obtuse, clothed with soft down and longer hairs intermixed, 2 – 3-seeded. — South Florida. — Stem 1° – 2° long. Leaflets 1′ long.

3. **R. Caribæa,** DC. Velvety throughout; stem prostrate or twining; leaflets thin, ovate, acute or slightly acuminate; stipules ovate; racemes slender, shorter than the leaves, loosely 3 – 5-flowered; teeth of the calyx short, nearly

equal; legume scymitar-shaped, acute. — South Florida. — Stem 2° – 3° long. Leaflets 1½′ – 2′ long. Racemes 1′ – 2′ long. Flowers small. Legume 1′ – 1½′ long, tapering at the base.

+– +– *Calyx 4-parted, nearly as long as the corolla, the lobes linear or lanceolate, nearly equal: stems twining or erect.*

4. **R. menispermoidea,** DC. Stems several from one root, prostrate or twining, downy; stipules ovate-lanceolate; leaflets solitary, reniform, tomentose; peduncles rarely as long as the petiole, with few crowded flowers at the summit; calyx deeply parted, the lanceolate acute or acuminate lobes nearly equal; legume oblong, acute, tomentose, 2-seeded. — Charlotte Harbor, South Florida, *Blodgett.* — Stems 2° – 3° long. Leaflets 1′ – 2′ in diameter.

5. **R. tomentosa,** Torr. & Gray. Leaflets 1 or 3, roundish or ovate; racemes dense-flowered; legume oblong.

Var. **monophylla,** Torr. & Gray. Pubescent; stem low (3′ – 6′), erect; leaflets mostly solitary, reniform or orbicular; racemes very short, the uppermost clustered. (Glycine simplicifolia, *Ell.*)

Var. **erecta,** Torr. & Gray. Velvety; stem erect (1° – 1½°); leaflets 3, oblong or roundish, sometimes acute; racemes many-flowered; the terminal one often elongated. (G. erecta and G. mollissima, *Ell.*)

Var. **volubilis,** Torr. & Gray. Hairy; stem twining, angled; lowest leaves simple, the upper ones trifoliolate; leaflets 3, roundish or ovate, often angular on the margins; racemes very short, few-flowered. (G. tomentosa, *Ell.*)

Dry sandy soil, Florida to North Carolina, and west to Mississippi. June – August.

* * *Stem tall, erect, with long virgate branches: flowers solitary or by pairs, in the axils of the upper leaves: calyx deeply 4-cleft, shorter than the corolla.*

6. **R. galactoides.** Stem bushy, purplish, closely pubescent; leaves very small, almost sessile; leaflets 3, oval or obovate, rigid, reticulate, pubescent; flowers mostly longer than the leaves, yellow, the vexillum reddish externally; legume oblong, 2-seeded. (Pitcheria galactoides, *Nutt.*) — Dry sand ridges, Florida and Alabama. June. — Stem 2° – 4° high. Leaflets 3″ – 9″ long. Legume ¾′ long.

27. APIOS, Boerh.

Calyx somewhat 2-lipped; the lateral teeth nearly obsolete, the lowest one longest. Vexillum very broad, reflexed; the keel at length twisted. Stamens diadelphous (9 & 1). Legume nearly terete, many-seeded. — A smooth perennial twining herb, with unequally pinnate leaves, and brownish-purple flowers in dense axillary racemes.

1. **A. tuberosa,** Mœnch. — Swamps, Florida to Mississippi, and northward. July and August. — Root bearing small edible tubers. Stem twining high. Leaflets 5 – 7, ovate or ovate-lanceolate. Racemes often by pairs, shorter than the leaves. Seeds black, separated by loose cellular tissue.

28. PHASEOLUS, L. Kidney-Bean.

Calyx 5-toothed, the two upper teeth more or less united. Keel of the corolla spirally coiled or twisted. Stamens diadelphous. Legume linear or falcate, few – many-seeded. — Twining or prostrate herbs, with trifoliolate stipellate leaves. Flowers commonly large, racemed, or clustered at the summit of the axillary peduncles.

** Flowers scattered in long racemes : legumes scymitar-shaped.*

1. **P. perennis,** Walt. Stem climbing, pubescent; leaflets ovate, acute, entire, membranaceous ; racemes often branching, twice as long as the leaves. — Low woods and margins of fields, Florida to Mississippi, and northward. July and August. ♃ — Leaflets 2′ – 4′ long. Flowers purple.

2. **P. sinuatus,** Nutt. Stem prostrate, smoothish ; leaflets small (1′ long), roundish or 3-lobed, strongly reticulate, rather rigid ; racemes 6 – 8 times as long as the leaves, solitary, simple. — Dry sand ridges in the pine barrens. Florida. July and August. ♃ — Stem 8° – 12° long. Flowers pale purple.

** * Flowers clustered at the summit of the peduncles : legume linear, nearly terete : seed scurfy.* (Strophostyles, *Ell.*)

3. **P. diversifolius,** Pers. Annual ; stems prostrate or trailing, rough-hairy ; leaflets ovate, entire or 2 – 3-lobed ; peduncles twice as long as the leaves. — Sandy soil, Florida to Mississippi, and northward. June – September. — Stems 2° – 4° long. Corolla purple, withering greenish.

4. **P. helvolus,** L. Perennial, smooth or hairy ; stems prostrate, leaflets varying from ovate to oblong-linear, rarely 3-lobed ; peduncles 3 – 6 times as long as the leaves. — Woods and margins of fields, Florida to Mississippi, and northward. June – September. — Corolla pale purple.

29. VIGNA, Savi.

Calyx 4-toothed, the upper tooth broader, entire or 2-cleft. Vexillum depressed-orbicular, with thickened knobs near the base. Keel not twisted. Stamens included in the keel, diadelphous, and with the style bent upward. Style hairy above, appendaged below the stigma. Legume nearly terete, somewhat torulose, the seeds separated by cellular tissue. — Twining herbs, with trifoliolate leaves, and racemose axillary flowers.

1. **V. glabra,** Savi. Annual, hirsute ; leaflets ovate or ovate-lanceolate ; racemes on stout peduncles longer than the leaves ; flowers yellow, crowded ; legume hirsute. (Dolichos luteolus, *Jacq.*) — Brackish marshes, Florida to South Carolina, and west to Mississippi. July – September.

30. ERYTHRINA, L.

Calyx tubular-campanulate, truncate, toothless. Vexillum narrow, straight, elongated. Keel and wings very small. Stamens and style partly exserted. Legume stipitate, torulose, partly dehiscent. — Trees, shrubs, or rarely herbs, often armed with prickles. Leaves trifoliolate, the terminal leaflet long-petiolulate. Flowers showy, scarlet, in long racemes.

1. **E. herbacea,** L. Stems herbaceous, several from a very thick root, prickly, the flowering ones mostly leafless; leaves long-petioled; leaflets ovate or somewhat hastate; vexillum lanceolate, folded; seeds scarlet. — Light sandy soil, Florida to North Carolina, and west to Mississippi. April and May. — Stems 2° – 4° high. Racemes 1° – 2° long. Flowers 2′ long. Legume opening by one suture opposite the seeds.

31. CLITORIA, L

Calyx tubular, 5-toothed. Vexillum very large, spurless on the back, obovate, emarginate. Keel shorter than the wings. Stamens monadelphous below. Style curved, hairy. Legume stipitate, linear-oblong, torulose, veinless. — Perennial herbs, with trifoliolate leaves, and very large purple flowers on axillary peduncles. Bracts opposite.

1. **C. Mariana,** L. Smooth; stem erect or twining; leaflets ovate-oblong, pale beneath; peduncles shorter than the leaves, 1 – 3-flowered; legume 3 – 4-seeded. — Dry soil, Florida to Mississippi, and northward. July and August. — Stem 1° – 3° long. Flowers 2′ long, pale purple. Bracts shorter than the calyx. Legume 1½′ – 2′ long.

32. CENTROSEMA, DC.

Calyx short, 5-cleft, the 2 upper lobes more or less united. Vexillum very large, spurred on the back, orbicular, emarginate. Keel nearly as long as the wings. Stamens monadelphous below. Style smooth. Legume nearly sessile, linear, compressed, the sutures thickened, the valves lined with an intra-marginal vein. — Twining herbs, with trifoliolate leaves, and very large purple flowers on short axillary peduncles. Bracts opposite.

1. **C. Virginiana,** Benth. Rough with a short hooked pubescence; stem very slender, much branched; leaflets oblong or linear-oblong, strongly reticulate; peduncles single or by pairs, 1 – 4-flowered; calyx-teeth subulate, barely exceeding the ovate bracts; vexillum adhesive; legume slender, elongated, curved, many-seeded. (Clitoria Virginiana, *Willd.*) — Dry soil, Florida to Mississippi, and northward. June – September. — Flowers 1½′ long. Legume 4′ – 6′ long.

33. AMPHICARPÆA, Ell.

Flowers of 2 kinds; those on the upper racemes perfect, but mostly abortive, those near the base of the stem or on the prostrate branches apetalous, but fruitful. Calyx tubular, 4 – 5-toothed. Vexillum obovate and partly enclosing the wings and keel. Stamens diadelphous, or in the fertile flowers distinct or wanting. Fertile legume obovate, fleshy, 1 – 2-seeded. — Twining annual or perennial herbs, with trifoliolate leaves. Flowers white or purplish, in simple or compound axillary racemes.

1. **A. monoica,** Nutt. Hairy; stems much branched; leaflets rhombic-ovate; sterile racemes single or by pairs, often compound, nodding; bracts stri-

ate; calyx-teeth short, triangular; fertile legumes hairy. (A. monoica and A. sarmentosa, *Ell.*) — Rich soil, Florida to Mississippi, and northward. August and Sept.

34. GALACTIA, P. Browne.

Calyx 4-toothed, the upper one broadest. Vexillum oblong or obovate, reflexed in flower. Stamens diadelphous. Legume more or less compressed, 2-valved, few – many-seeded. — Prostrate or twining, rarely erect, perennial herbs, with chiefly trifoliolate leaves, and mostly small purplish or white flowers in axillary racemes. Bracts alternate and deciduous. Leaflets stipellate.

* *Leaves trifoliolate, with the leaflets stalked: stems twining or prostrate.*

1. **G. spiciformis,** Torr. & Gray. Stem twining, minutely pubescent; leaflets (1′ long) thick and rigid, oblong-oval, obtuse or emarginate at both ends, smooth above, pubescent beneath; racemes spike-like, mostly longer than the leaves, the nearly sessile, mostly solitary flowers scattered on the common peduncle nearly to its base; corolla 2 - 3 times the length of the acuminate hairy calyx-lobes; legume coriaceous, compressed, falcate, thickened at the sutures, sprinkled with short appressed hairs, 6 – 10-seeded. — Varies with a stouter more pubescent and almost villous stem, larger (1½′ - 2′), thinner, and mostly acute leaflets, longer and stouter many-flowered racemes, and nearly straight legumes. (G. brevistyla, *Schlect.*) — South Florida. Aug. and Sept.

2. **G. pilosa,** Ell. Stem twining, pubescent or smoothish, much branched; leaflets thin, varying from oval to linear-oblong, obtuse, rounded or emarginate at both ends, pubescent and paler beneath, often smooth above; racemes slender, commonly longer than the leaves, sometimes 4 – 6 times as long; flowers single or 2 – 3 together, scattered on the common peduncle, distinctly pedicelled, acuminate in the bud; calyx sparse-hairy or smoothish, the acuminate lobes much shorter than the purple corolla; legume nearly straight, somewhat compressed, covered with short appressed hairs, 10-seeded. (G. mollis, *Nutt.* G. Macreei, *M. A. Curtis.*) — Dry soil, Florida to Mississippi, and northward. July and August. — Stem often elongated. Leaflets ½′ - 1′ long. Racemes occasionally 2 – 3 together.

3. **G. mollis,** Michx. Villous and somewhat hoary; stems mostly prostrate and simple; leaflets oval or oblong, obtuse or emarginate at both ends, or the upper ones acute; racemes single, about twice the length of the leaves, the short-pedicelled flowers approximate near the summit of the stout peduncle, acute in the bud; calyx, like the straight 10-seeded compressed legume, very villous and hoary. (G. pilosa, *Nutt.*) — Dry sandy pine barrens, Florida to North Carolina, and westward. July and August. — Stem 2° - 3° long. Leaflets 1′ long. Corolla reddish purple, one third longer than the acute calyx-lobes.

4. **G. Floridana,** Torr. & Gray. Hoary-pubescent; stems prostrate; leaflets oval or oblong, rarely acute, reticulate; racemes simple or branched, often by pairs, many-flowered, rarely longer than the leaves; flowers large, approximate; legume flat, 10-seeded. — Var. microphylla: every way smaller, the leaflets (½′ - ¾′ long) acute or emarginate, the few flowers almost sessile in axil-

lary clusters. — Dry sandy pine barrens, near the west coast of Florida. June–August. — Stem 2°–4° long. Leaflets 1′–2′ long. Flowers largest of all.

5. **G. glabella,** Michx. Stem prostrate, minutely pubescent; leaflets rather rigid, on short petioles, oblong, rarely acute, smooth and shining above, slightly hairy beneath; racemes seldom as long as the leaves, 3–6-flowered; style elongated; legume slightly falcate, at length smoothish, 4–6-seeded. — Dry pine barrens, Florida to Mississippi, and northward. July and August. — Stems 2°–3° long. Leaflets 1′ long. Flowers large, reddish-purple.

* * *Leaves trifoliolate, with nearly sessile leaflets: stems erect.*

6. **G. brachypoda,** Torr. & Gray. Stems slender, branching, and, as well as the leaves and peduncles, smoothish; leaves long petioled; leaflets oblong, obtuse; flowers few, somewhat clustered at the summit of the slender peduncle; calyx woolly. — Dry sandy ridges in the pine barrens of Middle Florida. July and August. — Stems 1°–1½° high. Leaflets shorter than the petiole. Flowers small, purple.

7. **G. sessiliflora,** Torr. & Gray. Stem short, smooth, simple; leaflets oblong or linear-oblong, obtuse, smooth on both sides; flowers crowded in nearly sessile axillary clusters; calyx hairy. — Dry pine barrens, Florida to North Carolina. June–August. — Stem 6′–12′ high. Flowers white. Legume oblong-linear, tomentose, 6–8-seeded.

* * * *Leaves pinnate: stems twining.*

8. **G. Elliottii,** Nutt. Leaflets 7–9, elliptical-oblong, emarginate, nearly smooth and shining above, pubescent beneath; racemes longer than the leaves, few-flowered near the summit of the peduncle; corolla white tinged with red; legume compressed, villous, falcate, 3–5-seeded. — Dry soil, Florida to South Carolina, near the coast. May and June. — Plant sometimes silky throughout.

35. CANAVALIA, DC.

Calyx tubular, 2-lipped; the upper lip larger, with 2 rounded lobes, the lower entire or 2-cleft. Vexillum large, orbicular, with 2 ridges within; keel incurved. Stamens monadelphous. Legume oblong-linear, compressed; the valves with a longitudinal ridge near the thickened upper suture. Seeds separated by interposed cellular tissue: hilum linear. — Prostrate or twining herbs, with trifoliolate leaves, and showy flowers in axillary racemes.

1. **C. obtusifolia,** DC. Smoothish; stem long, prostrate; leaflets thick, oval or orbicular, pointless; racemes stout, longer than the leaves, 6–8-flowered; flowers rose-color; legume 6-seeded. (C. rosea and C. miniata, *DC.*) — Sandy shores of St. Vincent's Island, Florida, and southward. July–Sept. — Stem 10°–15° long. Leaflets 3′ long. Legume 4′–5′ long, 1′ wide. Seeds brown.

36. DOLICHOS, L.

Calyx campanulate, somewhat 2-lipped, the upper lip of two more or less united teeth, the lower 3-cleft. Vexillum callous near the base. Keel more or less falcate. Stamens diadelphous, the free stamen spurred at the base. Style

bearded. Legume flattened. Seeds compressed, with a small and oval hilum. — Twining herbs, with trifoliolate leaves, and axillary racemose flowers.

1. **D. multiflorus,** Torr. & Gray. Perennial, pubescent; leaflets thin, large, orbicular, abruptly acute; racemes shorter than the leaves, many and densely flowered at the summit of the stout peduncle; upper lip of the calyx entire; keel nearly straight; legume 4 - 5-seeded. — Banks of rivers, near Milledgeville, Georgia, and westward. June and July. — Stem 5° - 10° long. Leaflets 3′ - 6′ in diameter. Flowers purple. Legume 2′ long, ½′ wide.

37. PISCIDIA, L. Jamaica Dogwood.

Calyx campanulate, 5-toothed. Keel obtuse. Vexillum rounded. Stamens diadelphous at the base, monadelphous above. Style filiform, smooth. Legume stipitate, linear, contracted between the seeds, furnished with four membranaceous longitudinal wings. Seeds compressed. — Tropical trees. Leaves unequally-pinnate. Flowers in terminal panicles.

1. **P. Erythrina,** L. Young branches, leaves, and panicle silky and hoary, at length smoothish; leaflets 7 - 9, oblong or obovate, abruptly acute, straight-veined, distinctly petiolulate; panicles axillary and terminal, many-flowered, shorter than the leaves; upper teeth of the calyx partly united; legume 6-seeded. — South Florida. March and April. — A small tree. Leaves deciduous. Corolla white, lined with red veins. Legume 2′ long, the broad wings wavy.

38. BAPTISIA, Vent.

Calyx campanulate, 4-cleft; the upper lobe broader and mostly emarginate. Vexillum roundish, with the sides reflexed; wings and keel straight. Stamens 10, distinct, shorter than the wings, deciduous. Legume stipitate, oval or oblong, inflated, few-seeded, pointed with the persistent style. — Erect widely-branching perennial herbs. Leaves simple or palmately trifoliolate, withering-persistent. Stipules deciduous or persistent, rarely wanting. Flowers showy in terminal racemes, rarely axillary and solitary.

* *Leaves simple, sessile, or perfoliate.*

1. **B. simplicifolia,** Croom. Smooth; leaves large, sessile, broadly ovate, obtuse; stipules none; racemes numerous, terminal, many-flowered, sessile or short-peduncled; ovary villous and hoary; legume small, ovate, coriaceous, smooth. — Dry pine barrens near Quincy, Middle Florida. July. — Stem much branched, 2° - 3° high. Leaves 2′ - 4′ long. Flowers rather small, yellow. Plant dries black.

2. **B. perfoliata,** Brown. Smooth; leaves perfoliate, oval or orbicular, glaucous; stipules none; flower axillary, solitary; legume small, ovate, coriaceous. — Dry sandy soil, in the middle districts of Georgia and South Carolina. May. — Stem 2° high. Leaves 2′ - 3′ long. Flowers small, yellow; vexillum orbicular, emarginate, shorter than the wings and keel. Ovary and style smooth.

3. **B. microphylla,** Nutt. Leaves sessile, roundish, cuneate at the base, the upper ones somewhat clasping; stipules leafy, rounded, the upper ones united with the leaves; flowers axillary, solitary, on short pedicels; legume roundish. *Nutt.* — Alabama and West Florida. — Leaves less than an inch long. Flowers unknown.

* * *Leaves trifoliolate, petioled.*

+ *Flowers yellow.*

4. **B. lanceolata,** Ell. Pubescent when young, at length smoothish; leaves on very short petioles, the upper ones nearly sessile; leaflets varying from lanceolate to obovate, thick, obtuse, tapering at the base; stipules and bracts small and caducous; flowers large, solitary in the axils, and in short terminal racemes, short-pedicelled; ovary villous; legume ovate or globose, coriaceous, slender-pointed. — Dry pine barrens, Florida to North Carolina, and westward. April and May. — Stem 2° high. Leaflets 1′ – 2′ long. Plant turns black in drying.

5. **B. villosa,** Ell. Pubescent; leaves short-petioled; leaflets oblong and obovate, tapering at the base, becoming smooth above; lower stipules and lanceolate bracts persistent; racemes many-flowered, declining; ovary villous; legume smoothish, coriaceous, oblong, strongly beaked. — Dry sandy soil, North Carolina. May. — Stem stout, 2° high. Leaves and flowers larger than in No. 4, the latter on slender pedicels. Plant turns black in drying.

6. **B. megacarpa,** Chapm. Stem smooth, with slender widely spreading branches; leaves on slender petioles; leaflets thin, elliptical or obovate, minutely pubescent and glaucous beneath; stipules and bracts caducous; racemes numerous, terminal and opposite the leaves, few-flowered; flowers large, pale yellow, on slender drooping pedicels; ovary smooth; legume large, thin, ovoid, slender-pointed. — Light rich soil, Gadsden County, Middle Florida, and along the Flint River, near Albany, Georgia. May. — Stem 2° – 3° high. Leaflets 1½′ – 2′ long. Legume 1′ – 1½′ long. Plant unchanged in drying.

7. **B. tinctoria,** R. Brown. Smooth; branches slender, elongated; leaves small, on short petioles, the upper ones nearly sessile; leaflets wedge-obovate; stipules and bracts minute, caducous; racemes numerous, short, few-flowered; flowers small, on short and bractless pedicels; ovary smooth; legume small, roundish, slender-pointed. — Dry sandy soil, Georgia to Tennessee, and northward. May and June. — Stem 2° high. Leaflets ½′ – 1′ long. Plant usually becomes blackish in drying.

8. **B. stipulacea,** Ravenel. Smooth; branches spreading; leaves small, short-petioled, 2 – 3-foliolate, the upper ones mostly simple and partly clasping; leaflets round-obovate, cuneate at the base; stipules and bracts large, round-cordate, persistent; flowers numerous, small, axillary, the upper ones racemose; pedicels short and bractless; ovary smooth, or slightly pubescent on the edges; legume small, ovoid, slender-pointed. — Sand-hills, near Aiken, South Carolina, *Ravenel.* June and July. — Stem 2°-3° high. Leaflets ½′ – ¾′ long. Plant nearly unchanged in drying. Apparently allied to No. 3.

9. **B. Lecontei,** Torr. & Gray. Pubescent; stem diffusely branched; leaves small, short-petioled; leaflets cuneate-obovate; stipules subulate and ca-

ducous, or the lower ones larger and persistent; racemes numerous, short, few-flowered, somewhat leafy at the base; bracts ovate-lanceolate, persistent; flowers small, on long 2-bracted pedicels; ovary villous; legume small, ovoid, slender-pointed. — Dry sandy soil, Florida and the southern parts of Georgia. May and June. — Stem 2° high. Leaflets 1′ long. Plant unchanged in drying.

10. **B. Serenæ,** M. A. Curtis. Very smooth, branching; leaves petioled; leaflets oblong-obovate, cuneate; flowers in a long loose central raceme, and in short racemes terminating the branches; pedicels longer than the calyx in fruit; segments of the calyx villous on the inside; legume oblong, inflated, the stipe longer than the calyx. — Society Hill, South Carolina, *Curtis*. May and June. — Stem diffusely branched, 1° – 2° high. Leaflets 1′ long. Legume 8″ long. Allied to No. 7 and No. 11. Plant unchanged in drying.

+– +– Flowers white.

11. **B. alba,** R. Brown. Smooth and glaucous; branches slender, flexuous, horizontal; leaves all distinctly petioled; leaflets thin, cuneate-lanceolate or oblong, obtuse; stipules and bracts minute, caducous; raceme usually solitary, central, very long, those on the branches few-flowered; legume cylindrical. — Damp soil, Florida to North Carolina, and westward. April. — Stem 2° – 3° high, often purple. Leaflets 1′ long. Racemes 1° – 3° long. Corolla ½′ long. Plant unchanged in drying.

12. **B. leucantha,** Torr. & Gray. Smooth and glaucous; branches spreading; leaves short-petioled; leaflets oblong and obovate, obtuse; stipules lanceolate, as long as the petioles, deciduous; racemes central, and terminating the branches, long, many-flowered; ovary smooth; legume large, oblong, much inflated, long-stipitate. — River-banks, Florida to South Carolina, and westward. March and April. — A stouter plant than the preceding, with larger leaves and flowers, changing blackish in drying. Legumes 1½′ long.

13. **B. leucophæa,** Nutt. Hairy or smoothish; stem stout, angled; leaves short-petioled; leaflets varying from oblanceolate to obovate, rigid, reticulate, soon smooth above; stipules and bracts leafy, ovate-lanceolate, persistent; racemes stout, declined, 1-sided; flowers large, yellowish-white, on long and slender erect pedicels; ovary villous; legume ovoid, long-pointed. (B. bracteata, *Muhl.*) — Dry rich oak woods, Wrightsboro, Georgia, and westward. April. — Stem low, with widely spreading branches. Racemes 4′ – 12′ long. Flowers 1′ long, the vexillum spotted with brown. Plant turns black in drying.

+– +– +– Flowers blue.

14. **B. australis,** R. Brown. Smooth; leaves all short-petioled; leaflets cuneate-obovate; stipules leafy, lanceolate, twice as long as the petioles; racemes large, erect, many-flowered; flowers (indigo blue) very large; bracts deciduous; legume oblong. (B. cærulea, *Nutt.*) — Banks of rivers, Georgia (*Pursh*), and westward. June and July. — Stem 2° – 3° high. Flowers 1′ or more long. Legume 2′ long. Plant unchanged in drying.

39. THERMOPSIS, R. Brown.

Stamens mostly persistent. Legume linear or oblong-linear, nearly sessile, flattened, many-seeded. Stipules leafy, persistent. Otherwise chiefly as in Baptisia. Flowers yellow.

1. **T. Caroliniana,** M. A. Curtis. Stem stout, simple, smooth; leaves long-petioled; leaflets membranaceous, obovate-oblong, silky beneath; stipules very large, ovate or oblong, clasping; racemes elongated, villous, erect, rigid, many-flowered; flowers on short pedicels; bracts ovate, deciduous; legumes oblong-linear, erect, straight, villous and hoary, 10 – 12-seeded. — Mountains of North Carolina. May – July. — Stem 3° – 5° high. Raceme 6′ – 12′ long. Legume 2′ long.

2. **T. fraxinifolia,** M. A. Curtis. Stem branching, slender, smoothish; leaves long-petioled; leaflets oblong, narrowed at the base, often acute, smooth above, glaucous and slightly pubescent beneath; stipules lanceolate, much shorter than the petioles; racemes erect, glabrous; flowers on slender spreading pedicels; bracts small, lanceolate, persistent; legume linear, falcate, pubescent, spreading, short-stipitate, 10-seeded. — Mountains of North Carolina. — Stem 2° high. Legume 3′ long.

3. **T. mollis,** M. A. Curtis. Pubescent; stem diffusely branched; leaflets obovate-oblong; stipules leafy, oblong-ovate, as long as the petioles; racemes declined; pedicels shorter than the calyx and lanceolate bracts; legume linear, flat, short-stipitate. (Baptisia mollis, *Michx.*) — Rocky woods in the middle districts of North Carolina. April and May. — Stem 2° high. Legume 2′ – 3′ long, many-seeded.

40. CLADRASTIS, Raf. YELLOW-WOOD.

Calyx 5-toothed; the nearly equal teeth short and obtuse. Vexillum large, roundish, reflexed, scarcely longer than the oblong wings and separate keel-petals. Stamens 10, distinct; filaments slender, incurved above. Legume short-stipitate, linear, flat, thin, marginless, 4 – 6-seeded, at length 2-valved. — A small tree, with yellow wood, pinnate leaves, and large white flowers in terminal drooping panicled racemes.

1. **C. tinctoria,** Raf. (Virgilia lutea, *Michx.*) — Hill-sides, in rich soil, Tennessee and Kentucky. May. — Leaflets 7 – 11, oval or ovate, acute, smooth, parallel-veined, 3′ – 4′ long; the common petiole tumid at the base. Stipules none. Racemes 1° long. Flowers 1′ long.

41. SOPHORA, L.

Calyx campanulate, obliquely truncated or 5-toothed. Stamens 10, free or cohering at the base. Style smooth. Legume moniliform, wingless, many-seeded, indehiscent. Seeds subglobose. — Trees or shrubs, with unequally pinnate leaves. Flowers in axillary and terminal racemes.

1. **S. tomentosa,** L. Hoary-tomentose; leaflets 11 – 17, oblong, coriaceous, becoming smooth above; raceme elongated; calyx minutely 5-toothed. — South Florida, near the coast. — Shrub 4° – 6° high. Flowers showy, yellow. Legume stipitate, 5′ long.

SUBORDER II. CÆSALPINIEÆ. BRASILETTO FAMILY.

42. CIRCIS, L. RED-BUD.

Calyx campanulate, 5-toothed. Petals all distinct, the vexillum shorter than the wings. Stamens 10, distinct. Legume oblong, compressed, many-seeded; the upper suture winged. — Trees, with broadly-cordate simple stipulate leaves, and reddish-purple clustered flowers appearing before the leaves.

1. **C. Canadensis,** L. — Rich soil, Florida to Mississipi, and northward. February and March. — Tree 15°–20° high. Flowers very numerous, from lateral buds.

43. CASSIA, L. SENNA.

Calyx of 5 nearly distinct sepals. Petals 5, unequal. Stamens 5–10. Anthers mostly of different forms, opening by two terminal pores. Legume many-seeded. Seeds often separated by cross partitions. — Herbs or shrubs. Leaves abruptly pinnate. Flowers yellow.

* *Stamens* 10, *unequal: part of the anthers abortive: sepals obtuse: stipules deciduous.*

1. **C. occidentalis,** L. Annual, smoothish; stem stout, branching; leaflets about 10, ovate or ovate-lanceolate, acute; petiole with a globular gland at the base; racemes 2–4-flowered, the upper ones crowded. — Waste places, common. — Stem 1°–5° high. Legume linear, erect, compressed, slightly curved, 3′–4′ long.

2. **C. obtusifolia,** L. Annual, roughish; stem slender, leaflets 6, cuneate-obovate, with a tooth-like gland between the lowest pair; flowers by pairs; legume narrow-linear, 4-angled, recurved. — Waste places, Florida to North Carolina, and westward. Stem 1°–4° high. Legume 6′–10′ long.

3. **C. Marilandica,** L. Perennial, smoothish; leaflets 12–18, oblong, acute; petiole with a club-shaped gland near the base; racemes several-flowered, the upper ones crowded, forming a compact panicle; legume linear, slightly curved. — Rich soil, Florida to Mississippi, and northward. August. — Stem 3°–4° high. Legume 3′–4′ long.

4. **C. angustisiliqua,** Lam.? Smooth or nearly so; stem branched; leaflets 6–10, oblong, mucronate, very oblique at the base, hairy at the base beneath, with a globular gland on the petiole or between the lowest pair of leaflets; flowers in a terminal panicle, on slender pedicels; sepals oblong-obovate; petals yellow, veiny; perfect stamens oblong, the larger ones curved; legume (3′–4′ long) broadly linear, flat, straight or somewhat falcate, many-seeded. — South Florida. Feb. — Leaflets 9″–12″ long. Legumes 4′′ wide.

5. **C. biflora,** L. Shrubby; leaflets 4–10, oblong, narrowed at the base, mucronate, with an obovoid gland between the lowest pair; racemes 2–4-flowered, often by pairs, slender, shorter than the leaves; fertile anthers 5; legume linear, flat, straight or somewhat falcate, smooth, many-seeded. — Key West. — Leaflets 1′ long. Legume 3′ long, 2″ wide.

* * *Stamens* 5 – 10: *anthers all perfect: sepals acute: stipules persistent.*

6. **C. Chamæcrista,** L. Annual; stem smooth or rusty-hairy; leaflets small, numerous, linear-oblong, mucronate; stipules acuminate, nerved; flowers borne above the axils, large, clustered, on long pedicels; anthers 10; style slender; legume linear, nearly straight. — Dry barren soil, Florida to Mississippi, and northward. July and August. — Stem 1° – 1½° high. Part of the petals often purple at the base.

7. **C. nictitans,** L. Annual; pubescent; leaflets numerous, oblong-linear; stipules and bracts subulate; flowers small, 2 – 3 in a cluster above the axils, on short pedicels; petals unequal; stamens 5, nearly equal.

Var. **aspera.** (C. aspera, *Ell.*) Hirsute; stamens 7 – 9, very unequal; ovary very hairy; flowers larger. — Dry old fields, Florida to North Carolina, and westward. August. — Stem 1° high, often prostrate. Leaflets about 40, sensitive, like those of the preceding species.

44. GLEDITSCHIA, L. Honey-Locust.

Flowers polygamous. Sepals 3 – 5, united at the base, spreading. Petals as many, or less by the union of the 2 lower ones. Stamens 3 – 5, distinct, inserted with the petals on the base of the calyx. Legume stipitate, flat, 1 – many-seeded. Seeds compressed. — Thorny trees. Leaves abruptly 1 – 2-pinnate, with oblong serrate leaflets. Flowers small, greenish, in short spikes.

1. **G. triacanthos,** L. Leaflets lanceolate-oblong; thorns mostly compound; legume very long, many-seeded, pulpy within. — Rich woods, Florida to Mississippi, and northward. June and July. — A large tree. Legume 12′ – 18′ long, 1′ wide, twisted.

2. **G. monosperma,** Walt. Leaflets ovate or oblong; thorns mostly simple; legume short, obliquely oval, 1-seeded, not pulpy. — Deep river swamps, Florida to Tennessee, and westward. July. — A small tree. Legume 1′ long.

Suborder III. MIMOSEÆ. Mimosa Family.

45. MIMOSA, L. Sensitive-Plant.

Flowers polygamous. Calyx minute, 4 – 5-toothed. Petals united into a 4 – 5-cleft tubular-campanulate corolla. Stamens 4 – 15, distinct, much exserted. Legume compressed, mostly jointed, 1 – many-seeded; the broad valves separating at maturity from the persistent margins. — Herbs, shrubs, or trees. Leaves bipinnate, sensitive. Flowers white or rose-color, capitate or spiked, on axillary peduncles.

1. **M. strigillosa,** Torr. & Gray. Herbaceous and rough with scattered appressed rigid hairs; stem prostrate; leaves long-petioled; pinnæ 5 – 6 pairs; leaflets 10 – 14 pairs, oblong-linear; peduncles longer than the leaves; heads of flowers elliptical; legume oval or oblong, 1 – 3-jointed, hispid. — Banks of rivers, East Florida, and westward. July and August. — Flowers rose-color.

M. PUDICA, L., the common SENSITIVE-PLANT, is partially naturalized in some localities.

46. SCHRANKIA, Willd.

Flowers polygamous. Calyx minute. Corolla funnel-shaped, 5-cleft. Stamens 8 – 10, distinct, exserted. Legume not jointed, prickly, 1-celled, many-seeded; the narrow valves separating at maturity from the broad margins. — Perennial prostrate prickly herbs, with bipinnate sensitive leaves, and purple flowers in globose axillary peduncled heads.

1. **S. uncinata,** Willd. Stem, petioles, peduncles, and legumes thickly beset with short and thick recurved prickles; pinnæ 5 – 6 pairs; leaflets 26 – 30, elliptical, reticulated with elevated veins beneath; peduncles mostly solitary, usually shorter than the leaves; legume oblong-linear, with a short acuminate point, about as long as the peduncle; seeds elliptical. — Dry sandy soil, Florida, and westward. June – August. — Stem 2° – 4° long. Legume 2′ long.

2. **S. angustata,** Torr. & Gray. Stem, &c. armed with scattered weak recurved prickles; pinnæ 4 – 6 pairs; leaflets about 30, linear-elliptical, veinless, or nearly so, on both sides; peduncles single or by pairs, much shorter than the leaves; legume narrow-linear, 3 – 4 times as long as the peduncle, ending in a long subulate smoothish point.

Var.? **brachycarpa.** Stem, &c. as in No. 1; leaflets oblong-linear; peduncles single or 2 – 4 in a cluster, the upper ones longer than the leaves; legumes (2′ – 3′ long) broadly linear, abruptly slender-pointed, densely armed with strong often branching prickles, about as long as the peduncle. — Dry pine barrens, Florida to North Carolina, and westward. June – August. — Stem 2° – 5° long. Legumes 4′ – 5′ long.

47. PITHECOLOBIUM, Martius.

Flowers perfect, rarely polygamous. Calyx tubular-campanulate, 4 – 5-toothed. Corolla tubular-funnel-shaped, 4 – 5-cleft. Stamens 10 or more, long exserted, monadelphous near the base. Style filiform. Legume broadly linear, compressed, contorted or falcate, transversely partitioned, mealy or pulpy within. Seeds lenticular. — Trees or shrubs, often armed with stipular spines. Leaves pinnate or bipinnate. Flowers chiefly capitate, axillary and terminal.

1. **P. Unguis-Cati,** Benth. Unarmed or spiny; leaves bipinnate; leaflets 4, thin, broadly and obliquely obovate, the partial petioles much shorter than the common one; heads globose, in a loose raceme; calyx-teeth short, ciliate; corolla yellowish, smooth; stamens crisped, twice as long as the corolla; ovary smooth. (Inga Unguis-Cati, *Willd.*) — South Florida. — Leaflets 1′ – 1½′ long, light green. (Legume spirally twisted, 5 – 6-seeded, white, and fleshy within. *McFadyen.*)

2. **P. Guadalupense.** Unarmed; leaves bipinnate; leaflets 4, coriaceous, obliquely oblong or obovate, the common and partial petioles nearly equal; peduncles solitary, axillary, longer than the leaves, or the upper ones racemose; calyx and corolla pubescent; stamens 30 or more, 3 – 4 times as long

as the corolla; ovary pubescent; legume smooth, falcate or hooked. (Inga Guadalupensis, *Desv.*) — South Florida. — Leaflets 1′ long, deep green. Legume 2′–4′ long. Flowers yellowish.

48. DESMANTHUS, Willd.

Flowers polygamous. Calyx 5-toothed. Corolla of 5 oblong-spatulate petals, or tubular and 5-cleft. Stamens 5–10. Filaments of the lower flowers filiform, sterile. Legume linear, continuous, 2-valved. — Herbs or shrubs, with abruptly bipinnate leaves, and heads or spikes of white flowers borne on axillary peduncles. Leaves sensitive.

1. **D. depressus,** Humb. & Bonpl. Stems slender, prostrate, sprinkled with hairs, shrubby at the base; pinnæ 2 pairs; leaflets oblong-linear, very obtuse, oblique and almost truncate at the base, hairy on the margins; peduncles 2–4-flowered, the two upper flowers (sometimes all) perfect; stamens 10; legume linear, many-seeded; seeds angular, compressed. — South Florida. — Stems 1°–2° long. Legume 1′–1½′ long.

2. **D. diffusus,** Willd. Stem somewhat shrubby, prostrate; pinnæ 4–5 pairs; spikes few-flowered, capitate; flowers pentandrous; legume narrowly linear. — Key West. — Legume 2′ long.

3. **D. virgatus,** Willd. Stem erect, rather rigid, smoothish, angled; pinnæ 1–7-pairs; leaflets numerous, oblong-linear; a rather large ovate gland below the lowest pinnæ; heads few-flowered; stamens 10; legume straight, linear, 10–30-seeded. (D. strictus, *Bertol.*) — South Florida. — Stem 1°–2° high.

49. NEPTUNIA, Lour.

Sterile filaments flat, membranaceous or petal-like. Legume oblong, few-seeded; otherwise like Desmanthus.

1. **N. lutea,** Benth. Stems ascending, rough with short rigid hairs; pinnæ 4–5 pairs; leaflets numerous, linear-oblong, mucronate, fringed on the margins, veiny beneath; stipules ovate, acuminate; peduncles longer than the leaves, rough, minutely bracted; heads oval or oblong, many-flowered, nodding; petals distinct; sterile filaments 8–10, yellow, spatulate-linear; fertile ones 10, white; legume 5–8-seeded. — Damp soil near the coast, Key West to Alabama, and westward. June. ♃ — Stems 2′–3′ long.

Order 48. ROSACEÆ. (Rose Family.)

Herbs, shrubs, or trees, with alternate stipulate leaves, and regular flowers. — Calyx of 3–8 (mostly 5) more or less united sepals, and often with as many bracts. Petals as many (rarely none), inserted with the few or numerous distinct stamens on the edge of the disk which lines the tube of the calyx, mostly imbricated in the bud. Ovaries 1–several, free, or more or less united with the calyx and with each other, 1–few-

ovuled. Seeds anatropous, and, with few exceptions, without albumen. Embryo straight, with large and thick cotyledons. Fruit various.

Synopsis.

SUBORDER I. CHRYSOBALANEÆ. Calyx bractless, free from the solitary ovary. Style single, arising from the base of the ovary. Ovules erect. Fruit a drupe. — Trees or shrubs. Leaves simple.

1. CHRYSOBALANUS. Calyx-limb persistent. Stone grooved. Low shrubs.

SUBORDER II. AMYGDALEÆ. Calyx bractless, free from the solitary ovary. Style single, terminal. Ovules suspended. Fruit a drupe. Leaves simple.

2. PRUNUS. Calyx-limb deciduous. Stone even, or grooved on the margins.

SUBORDER III. ROSACEÆ. Calyx 3 – 5-cleft, the lobes often alternating with as many bracts, free from the 1 – several ovaries. Style lateral or terminal. Fruit a 1 – 10-seeded follicle, or a 1-seeded achenium. — Herbs or shrubs. Leaves mostly lobed or compound.

* Fruit a 1 – 10-seeded follicle.

3. SPIRÆA. Petals obovate or roundish, imbricated in the bud.
5. GILLENIA. Petals linear-lanceolate, convolute in the bud.

* * Fruit a 1-seeded achenium.

+– Fruiting calyx dry, the lobes mostly valvate in the bud. Achenia few, or numerous and collected into a head.

++ Calyx-tube contracted at the throat (except No. 4). Achenia 1 – 4.

4. NEVIUSIA. Petals none. Stamens indefinite. Calyx-lobes serrate.
6. AGRIMONIA. Petals 5. Stamens 5 – 15. Calyx bristly.
7. SANGUISORBA. Petals none. Stamens 4. Style terminal.
8. ALCHEMILLA. Petals none. Stamens 1 – 4. Style lateral.

++ ++ Calyx open, bracted. Stamens and dry achenia numerous, the latter rarely 2 – 4.

= Seeds erect.

9. GEUM. Style persistent. Achenia numerous.
10. WALDSTEINIA. Style deciduous. Achenia 2 – 6.

= = Seeds suspended or ascending.

11. POTENTILLA. Receptacle flat or convex, dry.
12. FRAGARIA. Receptacle conical, enlarged and fleshy in fruit.

++ ++ ++ Calyx open, bractless. Stamens and juicy achenia numerous.

13. RUBUS. Achenia crowded on the conical receptacle.

+– +– Calyx-tube fleshy, urn-shaped; the lobes imbricated in the bud. Achenia numerous, inserted on the receptacle which lines the inside of the calyx-tube.

14. ROSA. Achenia dry and hairy. Prickly shrubs.

SUBORDER IV. POMEÆ. Calyx including and cohering with the 1 – 5 ovaries, very thick and fleshy in fruit.

15. CRATÆGUS. Fruit of 1 – 5 bony 1-seeded nutlets.
16. PYRUS. Fruit of 2 – 5 cartilaginous or membranaceous 2-seeded cells.
17. AMELANCHIER. Fruit of 3 – 5 two-seeded cells; seeds separated by a false partition.

1. CHRYSOBALANUS, L.

Calyx bell-shaped, 5-cleft, persistent. Petals 5. Stamens about 20; the inner ones often shorter and sterile. Ovary with 2 collateral erect ovules; the style arising from its base. Drupe 1-seeded; the stone grooved. — Low unarmed shrubs. Leaves nearly sessile, entire, with minute stipules. Flowers small, in axillary or terminal paniculate cymes.

1. **C. oblongifolius,** Michx. Leaves somewhat coriaceous, oblong, narrowed downward, mucronate, smooth on both sides, or hoary-pubescent beneath, deciduous; cymes terminal, racemose, many-flowered; calyx pubescent; stamens and ovary smooth; drupe ovoid. — Dry sandy pine barrens, Florida, Alabama and Georgia. May. — Stems creeping, the flowering branches 6′ – 12′ high. Leaves 3′ – 4′ long. Flowers greenish-white, mostly abortive.

2. **C. Icaco,** L. (Cocoa Plum.) Leaves short-petioled, round-obovate, mostly emarginate, smooth, coriaceous; cymes axillary, few-flowered, shorter than the leaves; calyx pubescent and hoary; stamens and ovary hairy; drupe large roundish. — South Florida. — Shrub 4° – 6° high, the stem and branches roughened with small white tubercles. Leaves 2′ long, 1½′ wide. Drupe yellow, purple, or black.

2. PRUNUS, L. Plum. Cherry.

Calyx 5-cleft, deciduous. Petals 5, spreading. Stamens 15 – 30. Ovary with 2 collateral suspended ovules. Style terminal. Drupe fleshy; the stone even. — Trees or shrubs. Leaves simple. Flowers white.

§ 1. Prunus. (Plum.) — *Drupe glaucous: stone more or less compressed: leaves convolute in the bud: flowers in lateral clusters, appearing before the leaves: branches often spiny.*

1. **P. Americana,** Marsh. Leaves thick, ovate or somewhat obovate, acuminate, rounded or slightly cordate at the base, pubescent beneath, sharply serrate, on glandular petioles; drupe large, globose. (P. hiemalis, *Ell.*) — Woods, Florida to Mississippi, and northward. March and April. — A small tree. Leaves 2′ – 3′ long, smooth when old. Flowers very numerous. Plum reddish, ½′ – 1′ in diameter, pleasantly acid, ripening in September.

2. **P. umbellata,** Ell. Leaves thin, ovate-lanceolate or oblong, acute at both ends, or the upper ones rounded at the base, finely and sharply serrate, smooth or soft-downy beneath; calyx-teeth emarginate, pubescent; drupe globose; stone slightly compressed. — Dry light soil, Florida and Alabama to South Carolina. February and March. — A shrub or small tree. Branches purple, shining. Leaves 1′ – 1½′ long. Plum rarely ½′ in diameter, dark-purplish or black, sour and bitter, ripening in August.

3. **P. Chicasa,** Michx. Leaves thin, lanceolate or oblong-lanceolate, acute, smooth, minutely and sharply serrate, with the teeth glandular and incurved; flowers short-peduncled; calyx smooth; drupe yellowish-red, globose. — Old fields, forming thickets. March. — A shrub or small tree. Leaves

$1\frac{1}{2}' - 2'$ long. Plum about $\frac{1}{2}'$ in diameter, thin-skinned and of an agreeable flavor.

§ 2. CERASUS. (CHERRY.) — *Drupe not glaucous: stone globular or slightly compressed: leaves folded in the bud, deciduous. — Spineless shrubs or trees.*

* *Flowers clustered.*

4. **P. Pennsylvanica,** L. Leaves thin, ovate-lanceolate, acuminate, finely and sharply serrate, green and smooth on both sides; flowers several in a cluster, on long peduncles; drupe globose, light red. — Rocky woods, North Carolina, and northward. May. — A small tree. Fruit small and sour.

* * *Flowers in racemes terminating leafy branches.*

5. **P. serotina,** Ehrhart. Leaves smooth, varying from oval to ovate-lanceolate, mostly acute or acuminate, serrate, with the teeth callous and appressed; racemes long, spreading; drupe globose, purplish-black. — Woods, Florida to Mississippi, and northward. April and May. — A tree 20° - 60° high.

6. **P. Virginiana,** L. Smooth throughout, or the lower surface of the leaves, branches, and racemes more or less pubescent; leaves thin, oval, oblong or obovate, finely and sharply serrate, abruptly acute or acuminate; racemes rather short and erect; drupe red. (P. hirsuta, *Ell.*?) — Light sandy soil, Georgia and northward. April. — Shrub 3° - 9° high. Leaves $1' - 3'$ long. Drupe astringent.

§ 3. LAUROCERASUS. (CHERRY-LAUREL.) — *Drupe not glaucous: stone globular: flowers in racemes from the axils of evergreen leaves.*

7. **P. Caroliniana,** Ait. (MOCK ORANGE.) Leaves coriaceous, smooth and glossy, ovate-lanceolate, acute, mostly entire; racemes shorter than the leaves, white; drupe ovoid, soon dry, black. — Banks of rivers, Florida to North Carolina, and westward. February and March. — A small tree.

3. SPIRÆA, L. MEADOW-SWEET.

Calyx 5-cleft, persistent. Petals 5, roundish, imbricated in the bud. Stamens 10 - 50. Follicles 3 - 12, 1 - 10-seeded. Styles terminal. — Shrubs or perennial herbs, with simple or compound leaves. Flowers white or rose-color, sometimes dicœcious.

* *Shrubs: flowers perfect.*

+ *Flowers corymbose.*

1. **S. opulifolia,** L. Leaves broadly ovate or cordate, 3-lobed, doubly crenate-serrate, smooth; corymbs umbellate, terminating the short branches, mostly pubescent; follicle smooth, inflated, 2 - 4-seeded. — Var. FERRUGINEA, *Nutt.* Leaves smaller (1′ long), slightly lobed, covered, like the branches, corymbs, and follicles, with a dense brownish pubescence. — Banks of streams, Florida and Alabama (the variety) to the mountains of Georgia, and northward. April and May. — Shrub 3° - 5° high, the old bark separating in thin layers. Flowers white.

+ + *Flowers panicled.*

2. **S. tomentosa,** L. Leaves simple, ovate or oblong, serrate, the lower surface, like the branches and close panicle, covered with a dense, rust-colored

pubescence; follicles 5, not inflated, tomentose, several-seeded. — Low grounds in the upper districts of Georgia, and northward. June and July. — Stem 2° – 3° high. Flowers small, pale purple.

3. **S. salicifolia,** L. Smooth; panicle dense-flowered; leaves varying from lanceolate to oblong-obovate, sharply and doubly serrate; follicles not inflated, smooth, several-seeded. — With the preceding. June and July. — Stem 2° – 5° high. Flowers white.

** * Perennial herbs: leaves lobed or compound.*

4. **S. lobata,** Murr. Flowers perfect, in long-peduncled paniculate cymes; leaves coarse, pinnately lobed, the terminal lobe very large, reniform, 7 – 9-parted, with the divisions incisely toothed and serrate; stipules reniform, persistent; follicles 6 – 8, 1 – 2-seeded. — Swamps along the mountains of Georgia and North Carolina, northward. June and July. — Stem smooth, 5° – 8° high. Upper leaves 3-lobed and sessile; the lowest ones on long petioles. Flowers rose-color. Petals and sepals often in fours.

5. **S. Aruncus,** L. Flowers diœcious, in elongated filiform panicled racemes; leaves thrice-pinnate; leaflets thin, lanceolate-oblong, sharply and doubly serrate; stipules minute or wanting; follicles 3 – 5, several-seeded, reflexed. — Woods on the mountains of Georgia, and northward. June. — Stem tall and slender. Flowers minute, white.

4. NEVIUSIA, Gray.

Calyx bractless, spreading, 5-parted, with the lobes leaf-like, incisely serrate and persistent. Corolla none. Stamens indefinite, inserted in several rows on the thin disk which lines the bottom of the calyx; filaments filiform. Ovaries 2 – 4, sessile: style nearly terminal, filiform. Ovule single, pendulous, anatropous. Achenia drupaceous. Cotyledons oval, flat. Embryo included in thin fleshy albumen. Radicle superior, inflexed-accumbent. — A shrub, with alternate leaves, free bristle-awl-shaped stipules, and single or clustered terminal flowers on slender peduncles.

1. **N. Alabamensis,** Gray. — Shady cliffs near Tuscaloosa, Alabama. *Rev. R. D. Nevius.* — Shrub 2° – 5° high, with spreading branches. Leaves short-petioled, membranaceous, ovate or oblong, doubly serrate, 1′ – 2½′ long. Flowers very numerous and showy.

5. GILLENIA, Mœnch. Indian Physic.

Calyx tubular-campanulate, 5-toothed. Petals 5, linear-lanceolate, unequal, inserted on the throat of the calyx, convolute in the bud. Stamens 10 – 20. Follicles 5, included in the calyx, 2 – 4-seeded. — Perennial herbs. Leaves thin, trifoliolate; the leaflets sharply and doubly serrate. Flowers white or rose-color, in loose few-flowered corymbs.

1. **G. trifoliata,** Mœnch. Stipules small, subulate, entire; leaflets oblong, acuminate, rather coarsely serrate; lower peduncles elongated, flowers

white. — Rich woods in the northern parts of Alabama, and northward. June. — Stem 2° – 3° high.

2. **G. stipulacea,** Nutt. Stipules leafy, ovate, serrate; leaflets lanceolate, coarsely serrate, or the lowest incisely lobed; flowers rose-color. — Mountains of Alabama, and northward. June. — Stem 2° – 3° high.

6. AGRIMONIA, Tourn. Agrimony.

Calyx 5-cleft, the tube top-shaped, contracted at the throat, and armed with hooked bristles. Petals 5. Stamens 5 – 15, inserted on the throat of the calyx. Achenia 2, included in the grooved and indurated calyx-tube. — Perennial herbs, with unequally pinnate leaves, leafy toothed stipules, and small yellow flowers in long spiked racemes. Fruit nodding.

1. **A. Eupatoria,** L. Stem hairy; leaflets 3 – 7, with smaller ones below or intermixed, oblong-obovate, hairy, sometimes white-downy beneath, coarsely serrate; petals twice the length of the calyx. — Dry open woods, Florida to Mississippi, and northward. August. — Stem 2° – 3° high.

2. **A. parviflora,** Ait. Stem and petioles hirsute; leaflets 9 – 15, with smaller ones between, lanceolate, coarsely serrate, roughish above, pubescent beneath. — Low ground, chiefly in the upper districts, Mississippi to North Carolina, and northward. August. — Flowers and fruit smaller than in No. 1.

3. **A. incisa,** Torr. & Gray. Stem, petioles, and lower surface of the leaves clothed with soft down and long hairs intermixed; leaflets 7 – 9, small (1′ long), oblong or obovate, coarsely serrate, with smaller ones between; stamens 5. — Dry open woods, Florida, Alabama, and Georgia. August. — Stem 2° high. Flowers small.

7. SANGUISORBA, L.

Calyx 4-parted, the tube 4-angled. Petals none. Stamens 4, the filaments usually thickened upward. Style terminal, slender. Stigma pencil-form. Achenia 1 – 2, included in the 4-winged indurated calyx-tube. — Herbs, with unequally pinnate leaves. Flowers in close heads or spikes.

1. **S. Canadensis,** L. Smooth; leaflets numerous, stalked, cordate-ovate or oblong, serrate; spikes long-peduncled, cylindrical, elongated in fruit; stamens flattened. — Wet meadows, along the Alleghany Mountains, Georgia, and northward. September. ♃ — Stem 2° – 4° high. Lowest leaves on long petioles. Flowers white.

8. ALCHEMILLA, Tourn.

Calyx 4 – 5-parted, and with as many alternate bracts; the tube obconical, contracted at the throat. Petals none. Stamens 1 – 4. Style lateral. Stigma capitate. Achenia 1 – 4, included in the persistent calyx-tube. — Small herbs, with palmately divided leaves, and minute greenish flowers, in corymbs or clusters.

1. **A. arvensis,** L. Annual, hairy; stem (1′ – 8′ high) leafy; leaves 3-parted, the divisions wedge-shaped, 3 – 5-lobed; flowers in axillary sessile clusters; fertile stamens 1 – 2. — Waste places, North Carolina and Virginia. Introduced. — Stem branching from the base. Leaves 4″ – 6″ long.

9. GEUM, L. Avens.

Calyx campanulate, deeply 5-cleft, and usually with as many bracts at the sinuses. Petals 5. Stamens and achenia numerous, the latter crowded on the conical or cylindrical dry receptacle. Styles terminal, long, persistent, jointed and hairy, or straight and smoothish. Seeds erect. — Perennial herbs, with pinnately divided leaves. Flowers yellow, white, or purple.

1. **G. album,** Gmelin. Smoothish or downy; stem slender, with spreading branches; radical leaves pinnate, or the earliest ones nearly simple and rounded; stem-leaves 3-parted, lobed or toothed; petals white, as long as the calyx; style jointed and bent near the middle, the smooth lower portion persistent and hooked; receptacle and ovaries bristly-hairy. — Rich woods, Georgia and northward. April and May. — Stem 2° high.

2. **G. geniculatum,** Michx. Hairy; leaves pinnate, 3-parted or 3-lobed, the upper ones nearly sessile; leaflets or lobes thin, ovate and obovate, toothed and serrate; style jointed and bent in the middle, the upper portion plumose and nearly persistent, the lower pubescent, or smooth above; heads of the hairy achenia sessile. — High mountains of North Carolina. July. — Stem 2° – 3° high. Flowers white, veiny.

3. **G. radiatum,** Michx. Hirsute; stem short (6′ – 12′), often branching; lowest leaves pinnate, the terminal leaflet large, reniform, obscurely lobed, doubly toothed, the lateral ones few and small; stem-leaves scattered, small, sharply toothed, sessile; flowers large; petals obcordate, yellow; style straight and wholly persistent, hairy at the base; heads of achenia sessile. — Highest mountains of North Carolina. July. — Flowers 1′ wide.

10. WALDSTEINIA, Willd.

Calyx obconical, 5-cleft, with as many alternate bracts. Petals 5. Stamens numerous, inserted into the throat of the calyx. Achenia 2 – 6, dry or somewhat fleshy. Style terminal, filiform, separating from the achenium by a joint. Seeds erect. — Low perennial herbs, with chiefly radical and roundish lobed leaves, and yellow flowers on scape-like stems.

1. **W. fragarioides,** Tratt. Smooth or hairy; leaves long-petioled, trifoliolate or 3-parted, with broadly cuneate and crenately toothed leaflets; scape as long as the leaves, bracted, many-flowered; achenia 4 – 6, minutely hairy. — Mountain-woods, Georgia and northward. May and June. — Stem and leaves 4′ – 6′ high. Petals larger than the calyx.

2. **W. lobata,** Torr. & Gray. Hairy; leaves cordate, crenately 3 – 5-lobed; scape filiform, bracted, 4 – 8-flowered; achenia mostly 2, hoary; petals rather

shorter than the calyx. (Dalibarda lobata, *Baldw.*) — Banks of the Flint and Chattahoochee rivers, in the middle districts of Georgia, not common. May and June. — Scape and leaves 4′ – 8′ high.

11. POTENTILLA, L. Cinquefoil.

Calyx flat, 5-cleft, with as many bracts. Petals 5, obcordate or roundish. Stamens numerous. Style lateral or terminal, deciduous. Achenia collected in a head on the dry and pubescent receptacle. — Herbs or shrubby plants, with variously divided leaves. Flowers solitary or cymose.

* *Style terminal, or nearly so.*

1. **P. Norvegica,** L. Annual, hairy; stem erect, branched; leaves palmately 3-foliolate, the leaflets obovate-oblong or lanceolate, coarsely serrate; flowers pale yellow, in leafy cymes; petals shorter than the calyx. — Waste places. Introduced, and sparingly naturalized. — Stem 1° – 2° high.

2. **P. Canadensis,** L. Perennial, hairy; stem prostrate or ascending, simple; leaves palmately 5-foliolate; leaflets obovate-oblong, coarsely serrate; flowers axillary, solitary, on long filiform peduncles; petals yellow, obcordate, as long as the calyx. (P. simplex, *Michx.*) — Meadows in the upper districts, Mississippi to North Carolina, and northward. July and August. — Stem 1° – 3° long.

* * *Style lateral.*

3. **P. tridentata,** Ait. Stem somewhat shrubby at the base, erect or ascending, pubescent; leaves rigid, trifoliolate, cuneate-oblong, 3-toothed at the apex; flowers white, in a terminal cyme. — High mountains of North Carolina. July. — Stem 5′ – 10′ high. Achenia and receptacle very hairy.

12. FRAGARIA, Tourn. Strawberry.

Flowers like Potentilla, but the dry achenia borne on the enlarged, at length pulpy and scarlet receptacle. Style lateral. — Perennial herbs with creeping runners. Leaves radical, trifoliolate. Flowers white, in terminal cymes.

1. **F. Virginiana,** Ehrhart. Hairy; leaflets oblong, coarsely serrate; scape few-flowered; fruit roundish, the achenia imbedded in the deeply pitted receptacle. — Rich woods, Florida to Mississippi, and northward. March and April. — Scapes 4′ – 6′ high.

13. RUBUS, L. Brier. Bramble.

Calyx concave or flattish, 5-parted, without bracts. Petals 5, deciduous. Stamens numerous. Achenia juicy, crowded on the conical or cylindrical receptacle. Style nearly terminal, deciduous — Perennial or shrubby and mostly prickly plants, with lobed or compound petioled leaves, and white or reddish flowers.

* *Heads of achenia hemispherical, deciduous : receptacle dry.*

1. **R. odoratus,** L. Shrubby, not prickly; the branches, petioles, and corymbs hispid with glandular hairs; leaves large, broadly ovate, 3-lobed, or

the lowest ones 5-lobed, the lobes acute or acuminate, toothed and serrate; calyx-lobes caudate; flowers large, rose-color; fruit reddish. — Rocky woods on the mountains of Georgia, and northward. June – August. — Stem 3° – 4° high. Flowers 2′ in diameter.

2. **R. occidentalis,** L. Glaucous; stem prickly, but otherwise very smooth, bending; leaves 3 – 5-foliolate; leaflets thin, ovate, acuminate, coarsely serrate or sparingly toothed, white-downy beneath; petals white, shorter than the reflexed short-caudate hoary calyx-lobes; fruit black. — Borders of woods along the mountains, Georgia and northward. May. — Stem biennial, 5° – 8° long.

* * *Heads of achenia oval or oblong, persistent: receptacle juicy.*

3. **R. villosus,** Ait. Tall, shrubby; stem erect or bending, armed, like petioles and peduncles, with stout recurved prickles, the branches and 3 – 7-foliolate leaves soft-hairy or nearly smooth; leaflets ovate or oblong, doubly serrate; racemes leafy below, bracted above; sepals acuminate, much shorter than the obovate white petals; fruit large, oblong, black. — Swampy thickets, common. April. — Stem 4° – 10° high.

4. **R. cuneifolius,** Pursh. Shrubby, armed with stout prickles; stem erect; branches and leaves tomentose; leaves trifoliolate, with the leaflets cuneate-obovate, unequally serrate towards the summit, tomentose and white beneath; racemes few-flowered; petals white; fruit ovoid, black. — Old fields, Florida to North Carolina, and westward. April. — Stem 2° – 4° high. Leaves and fruit smaller than in the preceding.

5. **R. trivialis,** Michx. Shrubby, and armed with stout straight or recurved prickles and bristly hairs; stem prostrate, slender; leaves 3 – 5-foliolate, partly persistent; leaflets smooth, oblong-ovate or obovate, acute, sharply serrate; racemes few-flowered, leafy below, mostly longer than the leaves; flowers large, white; fruit black. — Dry sandy soil, Florida to North Carolina, and westward. April.

6. **R. hispidus,** L. Somewhat shrubby, and armed with weak bristle-like prickles; stem slender, prostrate; leaves trifoliolate, persistent; leaflets obovate, obtuse, coarsely serrate, smooth; racemes many-flowered, slender, longer than the leaves; flowers small, white; fruit of few large and black achenia. (R. obovalis, *Michx.*) — Cold shady swamps among the mountains, Georgia and northward. May and June. — Fruit sour.

14. ROSA, Tourn. Rose.

Calyx 5-cleft, the urn-shaped tube becoming fleshy in fruit. Petals 5. Stamens numerous, inserted with the petals on the throat of the calyx. Ovaries numerous, hairy, inserted on the thin receptacle that lines the inner surface of the calyx-tube. Styles nearly included. Achenia bony. — Prickly shrubs. Leaves unequally pinnate. Stipules united with the petioles. Flowers showy.

* *Styles cohering, exserted.*

1. **R. setigera,** Michx. Stem long, reclining, smooth; leaflets 3 – 5, ovate, acuminate or acute, serrate, shining above; petioles, peduncles, and calyx glan-

dular; corymb few-flowered; petals obcordate; fruit globose, smooth. — Borders of swamps, Florida to South Carolina, and westward. June. — Stem 10° – 15° long. Flowers 2′ – 3′ wide, red.

* * *Styles distinct, included: flowers red or white.*

2. **R. Carolina,** L. Stem erect, smooth, armed with stout recurved stipular prickles; leaflets 5 – 9, oblong or elliptical, acute, finely serrate, dull and smoothish above, the lower surface paler, or, like the prickly petioles and caudate calyx-lobes, tomentose; flowers single or corymbose; calyx-tube and peduncles glandular-hispid. — Swamps, Florida to North Carolina, and westward. June. — Stem 4° – 6° high, commonly purplish. Fruit depressed-globose, glandular.

3. **R. lucida,** Ehrhart. Stem low, erect, armed with bristles and stout stipular prickles; leaflets mostly 5, elliptical or oblong-lanceolate, sharply serrate, smooth and shining above, paler and often somewhat pubescent beneath; flowers solitary, or 2 – 3 together; peduncles and calyx glandular, the latter with foliaceous, often incised lobes. (R. parviflora, *Ell.*) — Florida to Mississippi, and northward, mostly in dry soil, common. May and June. — Stem 1° – 3° high. A variable species. Stem sometimes smooth.

4. **R. rubiginosa,** L. (Eglantine.) Stem erect or curving, armed with very stout prickles; leaflets 5 – 7, oval or obovate, serrate, glandular beneath; flowers mostly solitary, on hispid peduncles; fruit obovate. (R. suaveolens, *Pursh.*) — Waste places in the upper districts: introduced. Branches yellowish-green. Leaves fragrant.

5. **R. lævigata,** Michx. (Cherokee Rose.) Stem long, trailing, smooth, the branches armed with very stout and curved prickles; leaves evergreen, mostly trifoliolate; leaflets smooth and shining, lanceolate, the midrib hispid; stipules deciduous; flowers large, solitary, white; calyx very bristly. — Common in cultivation.

15. CRATÆGUS, L. Hawthorn.

Calyx urn-shaped; the limb 5-cleft, persistent. Petals 5, orbicular, concave. Stamens few or many. Styles 1 – 5, distinct. Fruit fleshy, containing 1 – 5 bony nutlets. — Thorny shrubs or trees. Leaves simple, serrate or variously lobed. Flowers white, axillary and solitary, or in corymbs terminating short lateral branches. Stipules on the young branches linear, or lunate and serrate.

* *Corymbs compound, many-flowered.*

+ *Fruit small, not larger than a pea.*

1. **C. spathulata,** Michx. Young branches tomentose, otherwise nearly smooth and glandless throughout; leaves small, spatulate, crenate at the summit; those on the young shoots larger and incisely lobed; calyx-lobes very short; styles 5; fruit very small, red. — River-banks, Florida to North Carolina, and west to Mississippi. April. — A small tree. Corymbs sometimes slightly pubescent. Stipules lunate on the young branches.

2. **C. apiifolia,** Michx. Young branches, leaves, and corymbs whitened with soft hairs; leaves small, deltoid, pinnately 5–7-lobed, sharply toothed, nearly smooth when old, truncate or cordate at the base; styles 1–3, filiform; fruit globular, red. — River swamps, Florida to North Carolina, and westward. March and April. — A small tree. Leaves ½′–1′ long.

3. **C. cordata,** Ait. Young branches, leaves, and corymbs softly pubescent, soon smoothish; leaves large, deltoid-ovate, truncate or cordate at the base, long-petioled, 3–5-lobed and serrate; spines slender; fruit globose, red. — River-banks in the upper districts, Georgia, and northward. May and June. — A small tree. Leaves 1′–3′ long. Styles 5.

4. **C. arborescens,** Ell. Smooth; leaves thin, oval or elliptical, acute at both ends, finely serrate, sometimes obscurely toothed near the apex, on slender nearly glandless petioles; corymbs very numerous; styles 5; fruit ovoid, red. — Banks of rivers, Georgia and Florida, west to Mississippi. March and April. — A small tree, with ash-colored branches. Spines stout or wanting. Leaves 1′–2′ long, entire at the base, sometimes hairy in the axils of the veins beneath.

\+ \+ *Fruit large (½′–¾′ long); leaves, &c. mostly glandular.*

5. **C. Crus-galli,** L. Leaves thick, oblong-obovate, smooth, shining above, finely serrate from near the glandless base; those on the young branches sometimes slightly lobed; spines long and stout, or sometimes wanting; corymbs smooth or nearly so; styles 1–3; fruit pear-shaped or globose, red. — Woods, Florida to Mississippi, and northward. April and May. — A shrub or small tree.

6. **C. coccinea,** L. Smooth; leaves thin, roundish-ovate, with 3–5 short and sharply serrate lobes on each side, abruptly narrowed into the slender petiole, strongly straight-veined; those on the young branches often truncate or slightly cordate at the base, and more strongly lobed; spines stout; styles 3–5; fruit large, globose or pear-shaped, bright red. (C. viridis, *L.* C. populifolia, *Ell.*) — Open dry woods, Florida to Mississippi, and northward. April and May. — A shrub or small tree. Leaves 1′–2′ long, bright green.

7. **C. tomentosa,** L. Leaves large (3′–5′ long), broadly ovate or oval, finely serrate, and slightly lobed above the middle, abruptly narrowed into a short margined petiole, pubescent, especially beneath, the veins straight and impressed; corymbs large, tomentose; styles 1–3; fruit pear-shaped, orange-red.

Var. **punctata,** Gray. (C. punctata, *Jacq.*) Leaves smaller and smoother, more strongly furrowed by the impressed veins, and more tapering at the base; fruit globose, dull red, dotted with white. — Woods and swampy thickets in the upper districts, Georgia and Alabama, and northward. May. — A shrub or small tree. Flowers and fruit large.

* * *Corymbs simple,* 1–6-*flowered.*

8. **C. æstivalis,** Torr. & Gray. Glandless; leaves rigid, pubescent, becoming smooth above, and rusty-pubescent on the veins beneath, cuneate-obovate, crenate above the middle, tapering into a short petiole; corymbs

smooth, 3 – 5-flowered; styles 4 – 5; fruit large, globose, red. — Varies (C. lucida, *Ell.*) with smaller (1′), thinner, and smooth leaves, which are glossy above. — Margins of pine-barren ponds, Florida to South Carolina, and westward. March and April. — A small tree. Leaves 2′ – 3′ long. Fruit juicy, edible.

9. **C. flava,** Ait. Glandular; leaves cuneate-obovate, serrate and slightly lobed near the apex, smooth, tapering into a short petiole; corymbs smooth, 1 – 4-flowered; styles 4 – 5; flowers and pear-shaped fruit large. — Shady sandy places, Florida to North Carolina, and westward. May. — Tree 15° – 20° high. Leaves 2′ – 3′ long. Fruit greenish-yellow.

10. **C. glandulosa,** Michx. Branchlets, leaves, and corymbs whitened with soft hairs; leaves opaque, cuneate, entire or glandular-serrate, tapering into a slender petiole, becoming smoothish; those on the young branches often sparingly lobed; corymbs 3 – 6-flowered, unilateral; styles 5; fruit small, globose, red. (C. elliptica, *Ait.*) — Dry pine barrens, Florida to South Carolina, and westward. April. — A small tree, with coarse bark, and long recurved branches. Leaves 1′ long. Fruit 3″ – 4″ long.

11. **C. parvifolia,** Ait. Leaves obovate, scarcely petioled, serrate, the lower surface, like the branchlets and calyx, pubescent; spines numerous, long and slender; flowers mostly solitary; calyx-lobes large, serrate; styles 5; fruit large, globose or pear-shaped, somewhat hairy. — Sandy soil, Florida to Mississippi, and northward. April and May. — A much branched shrub, 3° – 5° high. Leaves 1′ long.

16. PYRUS, L. Pear. Apple.

Calyx urn-shaped, 5-cleft. Petals 5. Stamens numerous. Styles 2 – 5. Fruit fleshy or baccate, containing 2 – 5 cartilaginous, 2-seeded carpels. — Trees or shrubs. Flowers cymose or corymbose.

** Leaves simple, glandular: fruit depressed at the base.*

1. **P. coronaria,** L. Leaves on long and slender petioles, ovate, rounded, or slightly cordate at the base, angled or lobed, serrate, smooth; corymbs simple, few-flowered; flowers rose-color, very fragrant; styles woolly and united at the base. — Rich soil in the upper districts, Mississippi to North Carolina, and northward. April. — A small tree. Leaves 2′ – 3′ long.

2. **P. angustifolia,** Ait. Leaves lanceolate or oblong, acute at the base, serrate, short-petioled; corymbs simple, few-flowered; flowers rose-color, very fragrant; styles smooth, distinct. — Open woods, Florida to Mississippi, and northward. April. — A small tree. Fruit very sour.

** * Leaves simple, the midrib glandular above: fruit baccate, globose.*

3. **P. arbutifolia,** L. Leaves oval-oblong or somewhat obovate, abruptly acute or mucronate, smooth above, except the midrib, finely serrate; styles villous at the base.

Var. **erythrocarpa.** Stem tall (5° – 10°); branchlets, cymes, and lower surface of the large (2′ – 4′) leaves tomentose and hoary; petals and anthers reddish; berries red. (Aronia arbutifolia, *Ell.*)

Var. **melanocarpa.** Stem low (2° – 4°); branchlets, cymes, and leaves smooth or nearly so; leaves small; petals white; berries black. (Aronia melanocarpa, *Ell.*) — Swamps, Florida to Mississippi, and northward. March and April.

* * * *Leaves unequally pinnate: cymes compound: fruit baccate.*

4. **P. Americana,** DC. Leaflets 13 – 15, lanceolate, acuminate, serrate above the middle, soon smooth; cymes large, dense; berry small, globose or pear-shaped, scarlet. (Sorbus microcarpa, *Pursh.*) — Highest mountains of North Carolina. May and June. — A shrub or small tree. Fruit acid.

17. AMELANCHIER, Medic.

Calyx 5-cleft. Petals 5, oblong. Stamens numerous, short. Styles 5, more or less united. Fruit baccate, containing 3 – 5 cartilaginous 2-seeded carpels; seeds separated by a false partition. — Shrubs or small trees, with simple leaves, and white flowers in terminal racemes.

1. **A. Canadensis,** L., var. **Botryapium,** Torr. & Gray. Branches, leaves, and racemes tomentose when young, soon smooth; leaves elliptical, abruptly acute, finely and sharply serrate, often slightly cordate; racemes slender, appearing before the leaves; petals four times as long as the calyx; fruit globose, purplish. (Aronia Botryapium, *Ell.*) — Woods, Florida to Mississippi, and northward. February and March. — A small tree, with smooth whitish bark.

Var. **rotundifolia,** Torr. & Gray. Shrubby; leaves roundish-oval, somewhat acuminate, sharply serrate; racemes 6 – 10-flowered; petals small, narrowly oblong. (Aronia ovalis, *Ell.*) — Low grounds, chiefly in the upper districts, Georgia and northward. March. — Shrub 2° – 3° high.

The cultivated representatives of this order are the PLUM (PRUNUS DOMESTICUS, *L.*), APRICOT (P. ARMENIACA, *L.*), CHERRIES (P. AVIUM and P. CERASUS, *L.*), PEACH (PERSICA VULGARIS, *Mill.*), APPLE (PYRUS MALUS, *L.*), PEAR (P. COMMUNIS, *L.*), QUINCE (CYDONIA VULGARIS, *Pers.*), and the ALMOND (AMYGDALUS).

ORDER 49. CALYCANTHACEÆ. (CAROLINA-ALLSPICE FAMILY.)

Shrubs, with opposite and entire leaves, without stipules or pellucid dots. — Sepals and petals numerous and alike, united below into an obconical fleshy cup, imbricated in the bud. Stamens numerous, short, inserted within the petals, the inner ones often sterile. Anthers adnate, extrorse. Ovaries several, enclosed in the calyx-tube, and inserted on its inner face, becoming 1-seeded achenia in fruit. Seeds anatropous, without albumen. Cotyledons convolute.

1. CALYCANTHUS, L. Sweet-scented Shrub.

Calyx-tube closed, leafy-bracted; the lobes and petals in several rows, lanceolate, somewhat fleshy. Stamens deciduous. Mature fruit dry, pear-shaped, enclosing the large achenia. — Aromatic shrubs, with opposite or forking branches, short-petioled deciduous leaves, and large brownish-purple terminal flowers.

1. **C. floridus,** L. Branchlets, petioles, and peduncles hoary-pubescent; leaves oval or oblong, mostly acute or acuminate, very rough on the upper surface, tomentose and hoary beneath; sepals and petals linear-lanceolate, acute. — Banks of streams in the upper districts, North Carolina to Mississippi. April. — Shrub 4° – 8° high. Leaves 2′ – 3′ long. Flowers 1′ in diameter, very fragrant.

2. **C. lævigatus,** Willd. Branchlets, petioles, and peduncles pubescent or smoothish; leaves oblong or elliptical, mostly acute or acuminate, rough on the upper surface, paler and nearly smooth beneath; sepals and petals linear-lanceolate, acute. (C. inodorus, *Ell.*, leaves very rough above, but shining; flowers inodorous.) — Banks of streams, chiefly in the low country, Florida, Georgia, and westward. March and April. — Shrub 4° – 8° high. Leaves 2′ – 3′ long. Flowers 1½′ in diameter.

3. **C. glaucus,** Willd. Branchlets, petioles, and peduncles smooth; leaves large, ovate or ovate-lanceolate, acuminate, green and roughish on the upper surface, smooth and glaucous beneath; flowers large, the sepals and petals lanceolate, and abruptly sharp-pointed. — Low shady woods along the mountains of Georgia and North Carolina. May and June. — Shrub 6° – 8° high. Leaves rather rigid, 4′ – 7′ long. Flowers 1½′ – 2′ in diameter.

The Pomegranate (Punica Granatum, *L.*) belongs to the allied order Granateæ.

Order 50. MYRTACEÆ. (Myrtle Family.)

Trees or shrubs. Leaves opposite, simple, entire, dotted and commonly with an intra-marginal vein. Stipules none. — Calyx 4 – 6-cleft, valvate in the bud, the tube adherent to the compound ovary. Petals 4 – 6, inserted with the numerous stamens on the throat of the calyx, sometimes wanting. Filaments long, free, or variously combined. Anthers introrse, roundish, longitudinally dehiscent. Style solitary. Seeds without albumen, fixed to a central placenta.

1. EUGENIA, Micheli. Allspice.

Calyx-tube roundish, the limb 4-cleft. Petals 4. Stamens distinct. Ovary 2 – 3-celled, with several ovules in each cell. Fruit baccate, roundish, 1 – 2-celled, 1 – 2-seeded. Cotyledons thick and united. Radicle very short. — Flowers white, axillary, solitary, cymose, or clustered, 2-bracted.

** Flowers in axillary cymes.*

1. **E. dichotoma,** DC. Leaves oblong-obovate, obtuse or emarginate, rigid, and, like the branches, roughened with appressed hairs, at length smoothish, the margins revolute; peduncles twice as long as the leaves, 3 – 7-flowered, the central flowers sessile; calyx-tube obconical, 2-bracted, downy and hoary, the lobes roundish, spreading; petals orbicular, ciliate; stamens numerous. — South Florida. — A small tree. Leaves 1′ long. Branches compressed.

** * Flowers solitary or umbellate.*

2. **E. procera,** Poir. Smooth; leaves ovate, tapering but obtuse at the apex, abruptly contracted at the base into a short petiole; peduncles solitary or 2 – 4 together, filiform, not half the length of the leaves, 1-flowered; calyx-tube hemispherical; petals orbicular, ciliate; berry globose, 1-seeded. — South Florida. May. — A small tree. Leaves $1\frac{1}{2}'$ – 2′ long. Flowers conspicuous, white and fragrant. Berry as large as a grain of pepper.

** * * Flowers minute, in very short cluster-like racemes.*

3. **E. monticola,** DC. Smooth; leaves coriaceous, ovate-oblong, somewhat tapering towards the apex, but obtuse or emarginate, contracted at the base into a distinct petiole; racemes clustered, several-flowered, shorter than the petiole; stamens numerous; berry globose. — South Florida. — Shrub 4° – 6° high. Branches compressed. Leaves 2′ long. Flowers white. Berries abundant, as large as a grain of pepper, black.

4. **E. buxifolia,** Willd.? Leaves smooth, coriaceous, obovate-oblong, rounded at the apex, short-petioled; racemes single or clustered, few-flowered, about as long as the petiole; flowers minute; stamens few (9 – 12) or numerous; berry 1 – 3-seeded. — South Florida. — Varies much in the size of the leaves and berries, length of the petiole, and number of stamens, and probably includes two or more species.

2. CALYPTRANTHES, Swartz.

Calyx-tube obovate; the limb entire, opening across like a lid, deciduous. Petals none. Stamens numerous. Ovary 2 – 3-celled, with 2 ovules in each cell. Berry 1-celled, 1 – 4-seeded. Seeds roundish: testa smooth. Embryo curved; the long and slender radicle coiled around the distinct unequal folded and contorted cotyledons. — Shrubs or trees. Peduncles axillary, many-flowered.

1. **C. Chytraculia,** Swartz. Leaves ovate and ovate-lanceolate, acuminate but obtuse, pubescent, becoming smooth above; peduncles longer than the leaves, cymose-panicled, tomentose; flowers minute; berry dry, globose, 1 – 2-seeded. — South Florida. — A small tree.

Order 51. MELASTOMACEÆ. (Melastoma Family.)

Herbs, shrubs, or trees, with opposite 3 – 9-ribbed leaves, without dots or stipules, and showy flowers. — Calyx urn-shaped, 4 – 6-lobed, persistent,

cohering with the ovary below, or with its angles. Petals 4 – 6, twisted in the bud, inserted with the 4 – 12 stamens on the throat of the calyx. Anthers adnate, often appendaged, usually opening by terminal pores. Ovary 3 – 6-celled. Ovules numerous, attached to the central placentæ. Style solitary. Fruit baccate and indehiscent, or capsular and loculicidally dehiscent. Seeds anatropous, without albumen.

1. RHEXIA, L. Deer-Grass.

Calyx-tube prolonged and narrowed above the ovary, 4-cleft. Petals 4, roundish, deciduous. Stamens 8. Anthers 1-celled, opening by a terminal pore. Capsule 4-celled, many-seeded. — Perennial herbs. Leaves 3 – 5-ribbed. Flowers cymose, terminal.

* *Anthers long, linear, curving upward, saccate at the base, and commonly furnished with a bristle-like appendage at the insertion of the filaments: flowers purple or whitish.*

1. **R. Mariana,** L. Bristly; stem branched, terete or 6-angled; leaves lanceolate, acute, short-petioled, bristly serrate; calyx mostly smooth, cylindrical in flower, the neck in fruit as long as the globose capsular portion; flowers purple. — Varies with narrower, often linear leaves, and smaller whitish flowers. (R. lanceolata, *Walt.*) — Swamps, Florida to Mississippi, and northward. July – Sept. — Stem 1° – 2° high. Leaves 3-ribbed. Flowers 1½′ – 2′ wide, hairy externally.

2. **R. Virginica,** L. Bristly; stem 4-angled, nearly simple; leaves ovate and ovate-lanceolate, barely acute, sessile, bristly serrate, the lowest rounded; neck of the bristly fruiting calyx shorter than the capsular portion; the lobes ovate, acuminate. — Swamps, chiefly in the upper districts, Mississippi, and northward. July and August. — Stem 6′ – 12′ high. Leaves 3 – 5-ribbed. Flowers purple.

3. **R. stricta,** Pursh. Stem tall, smooth, 4-winged, bearded at the joints; leaves lanceolate and ovate-lanceolate, acute or acuminate, 5-ribbed, bristly serrate, sessile; cyme compound; calyx smooth, urn-shaped, the lobes lanceolate. — Margins of ponds in the pine barrens. Florida, Georgia, and westward. July and August. — Stem 2° – 4° high. Leaves rugose, the lateral ribs obscure. Flowers purple.

4. **R. glabella,** Michx. Stem terete, smooth, mostly simple; leaves lanceolate, sessile, entire or slightly serrulate, thick, smooth and glaucous; calyx smooth or bristly; flowers large, bright purple. — Low pine barrens, Florida to North Carolina, and west to Mississippi. June – August. — Root spongy. Stem 2° – 3° high. Leaves sweetish.

* * *Anthers short, oblong, erect, not appendaged: neck of the calyx short.*

+ *Flowers purple: leaves small, ovate or roundish, bristly serrulate.*

5. **R. ciliosa,** Michx. Stem simple, smooth, 4-angled above; leaves bristly on the upper surface, 3-ribbed; cyme few-flowered, leafy; calyx smooth. — Bogs in the pine barrens, Florida to Mississippi, and northward. July and

August. Stem 1° – 1½° high. Leaves rarely 1′ long. Flowers 1′ – 1½′ in diameter.

6. **R. serrulata,** Nutt. Low; stem simple, 4-angled, smooth; leaves smooth above; calyx glandular-bristly; cyme leafy, 1 – 6-flowered. — Open flat pine barrens, near the coast, Florida, Georgia, and westward. July and August. — Stem 2′ – 6′ high. Leaves and flowers smaller than in the preceding.

\+ \+ *Flowers yellow.*

7. **R. lutea,** Walt. Stem at length much branched, 4-angled, bristly; leaves smoothish, bristly serrulate, the lower ones obovate and obtuse, the upper lanceolate and acute; cymes numerous; calyx short and smooth; flowers small. — Pine-barren swamps, Florida to North Carolina, and westward. July and August. — Stem 1° high. Petals more persistent than those of the other species.

Order 52. LYTHRACEÆ. (Loosestrife Family.)

Chiefly herbs, with opposite or whorled and entire leaves, without stipules. Flowers mostly axillary. — Calyx tubular, persistent, 4 – 7-toothed, free from the 2 – 4-celled ovary. Petals as many as the teeth of the calyx and inserted into its throat, deciduous, sometimes wanting. Stamens as many as the petals, or 2 – 4 times as many, inserted below the petals. Anthers short, introrse. Style solitary. Capsule enclosed in the calyx, 1 – 4-celled, few or many-seeded. Placentæ central. Seeds anatropous, without albumen. — Sinuses of the calyx often appendaged. Stigma capitate, or rarely 2-lobed.

Synopsis.

* Calyx regular.

1. HYPOBRYCHIA. Calyx hemispherical. Petals none. Stigma 2-lobed. Capsule 2-celled.
2. AMMANNIA. Calyx campanulate. Stigma capitate. Capsule 4-celled.
3. LYTHRUM. Calyx cylindrical, striate. Capsule oblong, 2-celled.
4. NESÆA. Calyx short, even. Capsule globose, 3 – 5-celled. Stamens 10.

* * Calyx gibbous at the base.

5. CUPHEA. Calyx tubular, 12-ribbed. Stamens mostly 12. Capsule early ruptured.

1. HYPOBRYCHIA, M. A. Curtis.

Calyx hemispherical or campanulate, 4-lobed. Petals none. Stamens 2 – 4. Style very short: stigma 2-lobed. Capsule globose, 2-celled. — A submerged aquatic herb, with long filiform stems, opposite crowded pellucid linear leaves, and minute sessile axillary flowers.

1. **H. Nuttallii,** Torr. & Gray. — Ponds and still water, West Florida to North Carolina, and westward. June – Aug. — Stems 1° – 2° long. Leaves 1′ long, acute. Flowers not larger than a pin's head.

2. AMMANNIA, Houston.

Calyx globular or campanulate, 4-angled, 4-toothed, the sinuses commonly furnished with a small horn-shaped appendage. Petals 4, small, deciduous, sometimes wanting. Stamens 4, short. Stigma capitate. Capsule globular, 4-celled, many-seeded. — Low smooth annual herbs, with opposite leaves, and solitary or clustered axillary flowers.

1. **A. humilis,** Michx. Stem branching from the base; leaves lanceolate, tapering into a petiole; flowers solitary; style very short; petals 4, purplish. — Varies with the leaves dilated and somewhat cordate at the base, and the lower flowers clustered. (A. ramosior, *Michx.*) — Ditches and muddy places, Florida to Mississippi, and northward. August and September. — Stem 6′ – 12′ high.

2. **A. occidentalis,** DC. Stem nearly simple, ascending, rooting at the base; leaves lanceolate, narrowed into a petiole; flowers solitary, apetalous; calyx 8-toothed.

Var. **pygmæa.** Stem very short (½′ – 1′ long); sinuses of the calyx appendaged, emarginate, as long as the teeth; style short. — Key West, *Dr. Blodgett.* — Leaves obtuse. Stem 1 – 6-flowered.

3. LYTHRUM, L. Loosestrife.

Calyx cylindrical, striate, 4 – 7-toothed, usually with minute appendages in the sinuses. Petals 4 – 7. Stamens as many as the petals, or twice as many, inserted on the lower part of the calyx, nearly equal. Capsule oblong, 2-celled, many-seeded. — Herbs, with opposite or alternate leaves, and axillary purple or whitish flowers.

1. **L. alatum,** Pursh. Smooth; stem and virgate branches 4-angled; leaves lanceolate, acute at both ends, opposite, the uppermost alternate, and shorter than the flowers; petals and stamens 6. — Varies with branches shorter, leaves larger (2′ long), broadly lanceolate, sometimes whorled, the uppermost twice as long as the calyx. (L. lanceolatum, *Ell.*) — Swamps and river-banks, Florida and northward. July – September. — Stem 2° – 4° high. Flowers violet-purple.

2. **L. lineare,** L. Smooth; stem 4-angled, much branched; leaves all opposite, linear; flowers small, whitish; petals and stamens 6. — Brackish marshes, Florida and northward. August. — Stem 2° – 4° high. Calyx-teeth short.

4. NESÆA, Commerson.

Calyx hemispherical or campanulate, with 4 – 7 erect teeth, and as many longer and spreading horn-like appendages in the sinuses. Petals 4 – 7. Stamens twice as many as the petals. Capsule globose, 3 – 4-celled. — Perennial herbs or shrubby plants, with opposite or whorled leaves, and clustered pedicelled flowers in their axils.

1. **N. verticillata,** H. B. K. Shrubby; stems pubescent, recurved; leaves opposite and whorled, lanceolate, tomentose beneath; peduncles short, 3 or

several-flowered; petals 5, showy; stamens 10, the alternate ones shorter. (Decodon verticillatum, *Ell.*) — Marshes and margins of ponds, Florida and northward. August. — Stems 3° – 4° long. Flowers purple.

5. CUPHEA, Jacq.

Calyx tubular, 12-ribbed, gibbous or spurred at the base on the upper side, 6-toothed, and usually with as many little appendages in the sinuses. Petals 6, unequal. Stamens 11 – 12, unequal. Ovary with a gland at the base next the spur of the calyx. Style filiform. Stigma 2-lobed. Capsule 1 – 2-celled, few-seeded. — Chiefly herbs, with branching stems and purplish flowers.

1. **C. viscosissima,** Jacq. Annual, clammy-pubescent; leaves thin, opposite, ovate-lanceolate, long-petioled, rough; flowers nearly sessile, borne between the petioles, solitary; petals violet-purple; stamens 12. — Upper districts of Georgia, and northward. August. — Stem 1° high.

2. **C. aspera,** n. sp. Perennial; muricate-hispid and clammy; leaves 3 – 4 in a whorl, lanceolate, nearly sessile; peduncles longer than the leaves, borne between the petioles (whorled); petals white or pale-purple; stamens 11. — Low pine barrens, St. Joseph's, Florida. Stem 1° – 1½° high. Leaves 1′ long, rigid. Root bearing small tubers.

The CRAPE MYRTLE (LAGERSTRŒMIA INDICA, *L.*), originally from Eastern Asia, is common in cultivation.

ORDER 53. RHIZOPHORACEÆ. (MANGROVE FAMILY.)

Trees or shrubs, growing in maritime swamps, with opposite, entire, coriaceous leaves, and deciduous stipules between the petioles. — Calyx united with the ovary, 4 – 12-lobed, valvate or lid-like in the bud. Petals as many as the calyx-lobes and alternate with them. Stamens twice or several times as many as the petals, and inserted with them on the calyx. Ovary 2-celled with the cells 2-ovuled, or 1-celled and several-ovuled. Ovules pendulous. Fruit 1-celled, indehiscent. Albumen none. Radicle elongated.

1. RHIZOPHORA, L. MANGROVE.

Calyx-tube obovate, the limb 4-lobed, persistent. Petals 4, oblong, emarginate, enfolding the alternate stamens in the bud, woolly on the margins. Stamens 8. Anthers linear-oblong. Ovary 2-celled. Fruit encircled above the base by the persistent calyx-lobes, at length perforated at the apex by the radicle of the germinating embryo. — Flowers axillary, showy.

1. **R. Mangle,** L. Leaves obovate-oblong; peduncles 2 – 3-flowered; germinating embryo clavate; flowers pale yellow. — Shallow muddy shores, South Florida, forming dense low thickets.

ORDER 54. COMBRETACEÆ. (COMBRETUM FAMILY.)

Tropical trees or shrubs, with entire exstipulate leaves, and axillary spiked or capitate flowers. — Calyx-tube coherent with the 1-celled, 2 – 5-ovuled ovary; the limb 4 – 5-cleft, mostly deciduous. Petals 4 – 5, often wanting. Stamens 4 – 15, inserted with the petals on the calyx. Style slender: stigma simple. Fruit drupaceous or baccate, or dry and indehiscent, often winged. Seed solitary, suspended, anatropous, without albumen. Cotyledons convolute or variously folded.

1. LAGUNCULARIA, Gært.

Flowers in spikes. Calyx-tube obconical, the limb 5-parted, obtuse, persistent. Petals 5, minute. Stamens 10. Style subulate; stigma capitate. Ovary 1-celled, 2-ovuled. Drupe coriaceous, cuneate-obovate, compressed, angled, 1-seeded. Seeds germinating in the drupe. Cotyledons convolute. Radicle elongated. — Maritime shrubs, with opposite elliptical smooth and fleshy leaves, on biglandular petioles, and small flowers, in simple or compound axillary and terminal spikes.

1. **L. racemosa,** Gært. Spikes erect, rigid, hoary-tomentose, the lateral ones solitary, the terminal ones in threes, simple or branched; flowers scattered; calyx-tube obconical, furrowed, wing-angled in fruit. — South Florida. June to Aug. — A shrub or small tree, with the habit of the Mangrove.

2. **L. glabriflora,** Presl. Spikes spreading, slender, smooth, the lateral ones in pairs, the terminal ones in threes or fours; flowers minute, crowded, deciduous; calyx-tube cup-shaped, terete, even, with two opposite bractlets appressed to sides. — Banks of the Manitee River, South Florida, *Rugel.* June. — Perhaps a sterile form of the preceding.

2. CONOCARPUS, Gært.

Flowers densely crowded in a globular head. Calyx-tube about as long as the compressed 2-ovuled ovary; the limb 5-cleft, deciduous. Petals none. Stamens 5 – 10, exserted. Anthers cordate. Fruit coriaceous, scale-like, closely imbricated and indehiscent. Cotyledons convolute. — Trees or shrubs, with alternate entire and somewhat fleshy leaves. Heads of flowers spiked or panicled.

1. **C. erecta,** Jacq. Branchlets angular, smooth; leaves smooth, oblong or lanceolate, acute or acuminate, narrowed into a biglandular petiole; heads of flowers sessile, or on short and spreading pedicels; cone of fruit ovoid. — Var. SERICEA, *DC.* Branches, leaves, and panicles silky and hoary; lowest leaves mostly obovate and obtuse or emarginate; ovary abortive. — Sandy sea-shore, Tampa Bay, Florida, and southward. January and February. — A shrub or small tree. Leaves 2′ – 4′ long. Heads of fruit 3″ – 6″ long. Flowers greenish, minute.

3. TERMINALIA, L.

Flowers in spikes, often polygamous. Limb of the calyx deciduous, bell-shaped, 5-cleft, with the lobes acute. Petals none. Stamens 10, in 2 rows, longer than the calyx. Ovary 2–3-ovuled. Style filiform. Drupe dry and indehiscent, 1-seeded. Seed almond-like. Cotyledons spirally convolute. — Trees or shrubs, with mostly alternate leaves, which are crowded at the summit of the branches.

1. **T. Catappa, L.** Leaves short-petioled, softly pubescent when young, at length smoothish, obovate, wedge-shaped but truncated or slightly cordate at the base, with a depressed gland on each side of the midrib near the base; spikes very slender, shorter than the leaves, the upper flowers sterile; drupe ovate, acute, compressed, with the margins somewhat winged. — South Florida. — A large tree. Leaves 4′–8′ long. Flowers minute, pale green.

Order 55. ONAGRACEÆ. (Evening-Primrose Family.)

Calyx adherent to the ovary, and often produced into a tube beyond it, 2–6-lobed, valvate in the bud. Petals as many as the lobes of the calyx, inserted into its throat, convolute in the bud, sometimes wanting. Stamens as many or twice as many, inserted with the petals. Ovary 2–4-celled. Placenta central. Style solitary: stigma capitate or 2–4-lobed. Capsule loculicidally dehiscent or indehiscent. Seeds anatropous, with little or no albumen. — Chiefly herbs.

Suborder I. ONAGRACEÆ. Styles slender. Fruit 4-valved (indehiscent in Gaura). Seeds attached to a central placenta, without albumen.

* Calyx-tube produced beyond the ovary.

1. GAURA. Capsule nut-like, indehiscent, 1–4-seeded.
2. ŒNOTHERA. Capsule 4-valved, many-seeded.

* * Calyx-tube not produced beyond the ovary.

3. EPILOBIUM. Stamens 8. Petals 4. Seeds comose.
4. JUSSIÆA. Stamens 8–12. Petals 4–6. Capsule long. Seeds naked.
5. LUDWIGIA. Stamens 4. Petals 4, or none. Capsule short, many-seeded.
6. CIRCÆA. Stamens 2. Capsule obovate, 1–2-seeded.

Suborder II. HALORAGEÆ. Styles very short or none. Fruit indehiscent. Seeds suspended, solitary in each cell. Albumen thin. — Flowers minute, axillary.

7. PROSERPINACA. Flowers perfect. Stamens 3. Capsule 3-angled.
8. MYRIOPHYLLUM. Flowers monœcious. Stamens 4–8. Capsule 4-angled.

1. GAURA, L.

Calyx-tube much produced beyond the ovary, the limb 3–4-lobed, reflexed, deciduous. Petals 3–4, clawed, unequal or turned to the upper side. Stamens

6 – 8. Style declined: stigma 4-lobed. Ovary 3 – 4-celled. Fruit 3 – 4-angled, mostly 1-celled, 1 – 4-seeded. — Herbs with alternate leaves, and white or purple flowers in a long-peduncled raceme or spike.

1. **G. biennis,** L. Soft-hairy; leaves oblong-lanceolate, acuminate, becoming smoothish, wavy-denticulate on the margins; petals spatulate, white; fruit obtusely 4-angled, acuminate at both ends, sessile. — Dry soil, Georgia to Tennessee, and northward. July and August. ② — Stem 3° – 8° high. Spikes compound.

2. **G. angustifolia,** Michx. Stem simple, or sparingly branched, closely pubescent; leaves lanceolate, acute, coarsely-toothed, often blotched with purple; the uppermost linear and nearly entire; fruit nearly sessile, acute at both ends, sharply 3 – 4-angled. — Dry old fields and sandy places near the coast, Florida to North Carolina, and westward. June – August. ② — Stem 2° – 3° high. Flowers white.

3. **G. filipes,** Spach. Pubescent and somewhat hoary, becoming smoothish; stem slender, paniculately branched; leaves linear, toothed, wavy; fruit ovoid, obtuse, sharply 4-angled, on slender pedicels. — Dry pine barrens, Florida to South Carolina, and westward. July – Sept. ②? — Stem 2° – 3° high, very leafy.

2. ŒNOTHERA, L. Evening-Primrose.

Calyx-tube produced beyond the ovary; the limb 4-lobed, reflexed and deciduous. Petals 4. Stamens 8. Stigma 4-lobed. Capsule 4-valved, many-seeded. — Herbs, with alternate leaves, and axillary or racemose chiefly yellow flowers. Pollen-grains triangular, connected by cobwebby hairs.

* *Capsule cylindrical, sessile: flowers expanding at night: annuals or biennials.*

1. **Œ. biennis,** L. Hairy, hirsute, or smoothish; stem tall, often simple; leaves lanceolate and ovate-lanceolate, acute, wavy and toothed or serrate on the margins; the earliest ones sometimes pinnatifid; spikes leafy, at length elongated; calyx-tube longer than the lobes; flowers large. (Œ. muricata, *Pursh.* Œ. grandiflora, *Ait.*) — Fields and waste places, everywhere. June – Sept. — Stem 2° – 4° high. Varies greatly in pubescence and size of the flower.

2. **Œ. sinuata,** L. Hairy or downy; stems ascending or diffuse; leaves oblong, pinnately lobed, the lowest pinnatifid; flowers small, axillary; calyx and capsule hairy. Passes through several intermediate forms into Var. HUMIFUSUM, Torr. & Gray. Stems prostrate, hoary; leaves small, lanceolate, sparingly toothed or entire. — Fields and waste places, common; the variety in drifting sand along the coast. May – Sept. — Stems 2′ – 2° high.

* * *Capsule obovate or clavate, furrowed, and more or less peduncled: flowers expanding in sunshine.*

3. **Œ. glauca,** Michx. Smooth and somewhat glaucous; leaves sessile, oblong-ovate, wavy-denticulate, acute; racemes few-flowered, leafy; flowers large; capsule ovoid-oblong, 4-winged, tapering into a short pedicel. (Œ. Fraseri, *Pursh.*) — Mountains of Georgia, North Carolina, and Tennessee. May

–July. ♃ — Stem branching, 2° – 3° high. Leaves 2′ – 3′ long. Flowers 2′ in diameter.

4. **Œ. riparia,** Nutt. Stem slightly pubescent, very leafy; leaves linear-lanceolate, remotely denticulate, narrowed into a short petiole; raceme short, leafy at the base, elongated in fruit; flowers large; capsule oblong-clavate, distinctly pedicelled, slightly 4-winged, with 4 strong intermediate ribs. — Swamps and river-banks, Florida and northward. June and July. ② — Stem 2° – 3° high. Leaves 2′ – 4′ long, pubescent on the midrib and margins. Flowers 2′ in diameter.

5. **Œ. fruticosa,** L. Hairy or smoothish; stem mostly simple; leaves lanceolate, commonly wavy and remotely denticulate on the margins; raceme at first corymb-like, at length elongated; flowers large; capsule 4-winged, with intermediate ribs, oblong-clavate, longer than the pedicel. — Fields, Mississippi to North Carolina, and northward. June – Sept. ♃ — Stem 1° – 2° high. Flowers 1′ – 2′ in diameter.

6. **Œ. linearis,** Michx. Stem slender, smooth below, pubescent above; the young branches hoary; lowest leaves obovate; the others linear-lanceolate, entire or sparingly denticulate; raceme short, many-flowered, leafy; capsule obovate, 4-winged, with conspicuous intermediate ribs, mostly shorter than the pedicel. — Dry light soil, Florida to Mississippi, and northward. April – June. — Stem 1° – 1½° high. Flowers 1′ in diameter.

7. **Œ. pumila,** L. Low, smoothish; leaves lanceolate, obtuse; raceme leafy; flowers small; capsule oblong-obovate, 4-wing-angled, nearly sessile. — Mountains of Georgia and Carolina, and occasionally also around dwellings in the low country, from seeds introduced in Northern hay. June. — Stem 6′ – 12′ high. Flowers ½′ in diameter.

8. **Œ. linifolia,** Nutt. Low, smoothish; stem at length much branched; leaves very numerous, linear-filiform, the lowest spatulate; raceme pubescent, few-flowered; bracts shorter than the ovary; flowers small; lobes of the stigma coherent into a globular head; capsule obovate, 4-angled, nearly sessile. — Gravelly hills, near Scott's mill, Warren County, Georgia, and westward. June. — Stem 6′ – 12′ high. Flowers 4″ – 5″ in diameter.

3. EPILOBIUM, L. Willow-Herb.

Calyx-tube not prolonged beyond the ovary; the limb 4-cleft, deciduous. Petals 4. Stamens 8. Capsule elongated, many-seeded. Seeds with a tuft of long hairs at the apex. — Perennials, with alternate and opposite denticulate leaves, and chiefly white or purple flowers.

1. **E. angustifolium,** L. Stem tall, simple, smoothish; leaves alternate, lanceolate, entire or wavy on the margins, paler beneath; racemes elongated, bracted; flowers showy; petals obovate, purple; stigma 4-lobed; capsule and calyx hoary-tomentose. (E. spicatum, *Lam.*) — Mountains of North Carolina and northward. July. — Stem 3° – 6° high.

2. **E. coloratum,** Muhl. Stem smoothish, much branched; leaves mostly opposite, lanceolate or ovate-lanceolate, denticulate; raceme leafy; flowers small, reddish; petals 2-cleft; stigma clavate; capsule downy. (E. tetragonum, *Ph., Ell.*) — Swamps in the upper districts, Mississippi to North Carolina, and northward. August. — Stem 1°–2° high.

3. **E. palustre,** L., var. **lineare,** Gray. Stem pubescent, branching above; leaves linear, slightly denticulate, the lower ones opposite; raceme leafy; flowers small, white or rose-color; stigma clavate; capsule hoary. — Mountains of North Carolina, and northward. August. — Stem 1°–2° high.

4. JUSSIÆA, L.

Calyx-tube long, 4-angled or cylindrical, not prolonged beyond the ovary; the limb 4–6-lobed, persistent. Petals 4–6. Stamens 8–12. Capsule mostly elongated, 4–6-celled, many-seeded, opening irregularly at the sides. — Marsh herbs, with alternate leaves, and axillary yellow flowers.

1. **J. leptocarpa,** Nutt. Hairy; stem erect, at length much branched; leaves lanceolate, acute; flowers small; calyx-lobes mostly 6, as long as the petals; capsule linear, cylindrical, much longer than the pedicel. — Marshes, Florida, and westward. June–Sept. ⓘ — Stem 2°–5° high. Capsule 1½′ long, slightly curved.

2. **J. grandiflora,** Michx. Hairy; stem creeping at the base; leaves lanceolate, acute; flowers large; calyx-lobes 5, half as long as the petals; ovary (rarely maturing) rather shorter than the pedicel. — Marshes, South Carolina, and westward. May–August. ♃ — Stem 2°–3° long. Flowers 2′ in diameter. Capsule cylindrical.

3. **J. decurrens,** DC. Smooth; stem erect, branched, wing-angled; leaves lanceolate, acute, sessile; flowers nearly sessile; calyx-lobes 4, nearly as long as the petals; stamens 8; capsule 4-angled, oblong-clavate. (Ludwigia decurrens, *Ell.*) — Ditches, &c., Florida to North Carolina, and westward. July–Sept. ⓘ — Stem 6′–3° high.

5. LUDWIGIA, L. Seed-box.

Calyx-tube 4-angled or cylindrical, mostly short, not prolonged beyond the ovary. Petals 4, roundish or obcordate, often wanting. Stamens 4. Style short. Stigma capitate. Capsule variously dehiscent, 4-celled, many-seeded. — Perennial and mostly stoloniferous marsh herbs, with entire leaves, and yellow flowers.

* *Capsule cubical, indehiscent, discharging the seeds through a central pore of the convex disk: calyx-lobes deciduous: petals large: stamens and style slender: leaves alternate: flowers pedicelled.*

1. **L. alternifolia,** L. Smoothish; stem much branched; leaves lanceolate, short-petioled, acute; calyx-lobes spreading, about as long as the petals; capsule large, wing-angled. (L. macrocarpa, *Michx.*) — Shady swamps, Florida

to Mississippi, and northward. August. — Stem 2° – 3° high. Flowers axillary, or the upper ones somewhat racemed.

2. **L. virgata,** Michx. Tomentose; stem slender, simple, or branching from the base; leaves obtuse, sessile, the lowest oblong, the uppermost linear; flowers in elongated leafy racemes; petals twice as long as the reflexed calyx-lobes; capsule strongly 4-angled. — Low pine barrens, sometimes in rather dry places, Florida to North Carolina, and westward. July and August. — Stem 2° – 3° high. Varies considerably in pubescence, and size of the flowers and capsule.

3. **L. hirtella,** Raf. Hairy; stem slender, simple or sparingly branched; leaves short, lanceolate or oblong, obtuse, sessile and rounded at the base; flowers axillary; petals twice as long as the erect or spreading calyx-lobes; capsule strongly angled. (L. pilosa, *Ell.*) — Flat pine barrens, Florida to Mississippi, and northward. August. — Stem 2° – 3° high.

* * *Valves of the capsule separating from the concave disk, and irregularly from the persistent partitions and placenta: calyx-lobes persistent: petals small or none: stamens and style short: stems erect or ascending: leaves alternate: flowers sessile.*

+ *Petals conspicuous.*

4. **L. linearis,** Walt. Smooth; stem (1° – 3° high) virgately much branched; leaves linear, acute; flowers small; capsule clavate-oblong, with 4 rounded angles, 2 – 3 times as long as the triangular-ovate calyx-lobes. — Ditches and ponds, Florida to Mississippi, and northward. July – Sept. — Bark at the base of the stem spongy.

5. **L. linifolia,** Poir. Smooth; stem low (6′ – 12′), creeping at the base, branching; leaves linear or linear-spatulate, often obtuse; capsule linear-cylindrical, rather longer than the lanceolate calyx-lobes. — Ditches and swamps in the low country, Florida to North Carolina, and westward. July – Sept.

+ + *Petals minute or wanting.*

6. **L. cylindrica,** Ell. Smooth; stem angled above, often much branched; leaves long, lanceolate, obscurely denticulate, acute, tapering into a petiole; petals none; capsules axillary, often clustered, cylindrical or obscurely 4-sided, many times longer than the small calyx-lobes. — Swamps, Florida to South Carolina, and westward. July – Sept. — Stem mostly bushy, 2° – 3° high. Leaves 3′ – 4′ long.

7. **L. pilosa,** Walt. Tomentose; stem stout, terete, much branched; leaves sessile, lanceolate or oblong, acute; flowers in dense terminal spikes; petals mostly wanting; capsule globose – 4-sided, about as long as the spreading calyx-lobes. (L. mollis, *Ell.*) — Ditches and ponds near the coast, Florida to North Carolina, and westward. July – Sept. — Stem 2° – 3° high, the branches spreading. Capsule whitish.

8. **L. sphærocarpa,** Ell. Smooth or slightly pubescent; stem slender, angled above, short-branched; leaves linear-lanceolate, acuminate; flowers very small, axillary; petals none; capsule globose, pubescent, as long as the calyx-lobes. — Margins of ponds, Florida to Mississippi, and northward, not common. July – Sept. — Stem 2° – 3° high. Capsule 1″ – 2″ long.

9. **L. capitata,** Michx. Smooth; stem mostly simple, slender, angled above; leaves long, lanceolate, acute, sessile, the lowest ones broader and obtuse; flowers in a compact oblong or ovate head, the lower ones sometimes scattered; petals minute, mostly wanting; capsule obtusely 4-angled, somewhat narrower at the base, longer than the calyx-lobes. — Wet pine barrens, Florida to North Carolina. July and August. — Stem 2° – 3° high.

10. **L. lanceolata,** Ell.? Smooth; stem stout, terete, at length much branched; leaves lanceolate, sessile; flowers very numerous, in all the axils, green; petals none; capsule cubical, with the sides flat and the angles margined, twice as long as the calyx-lobes; seeds cylindrical. — Ponds and swamps in the pine barrens, Florida and Georgia. July – Sept. — Stem 1° – 2° high. Flowers small.

11. **L. alata,** Ell. Smooth; stem slender, simple or sparingly branched near the summit, strongly angled; leaves cuneate-lanceolate, obscurely denticulate; flowers few, near the summit of the branches, white; petals none; capsule cubic-obconical, with concave sides and winged angles, as long as the calyx-lobes; seeds ovoid. — Brackish marshes, Florida to North Carolina, and westward. July and August. — Stem 2° – 3° high.

12. **L. microcarpa,** Michx. Smooth; stem low, creeping at the base, 3-angled, mostly simple; leaves spatulate-obovate; petals none; capsule minute, cubic-obconical, shorter than the calyx-lobes. — Muddy places, Florida to North Carolina, and westward. July and August. — Stem 6′ – 12′ high. Capsule scarcely larger than a pin's head.

* * * *Stems creeping: leaves opposite.*

+– *Petals none.*

13. **L. palustris,** Ell. Smooth; stems diffuse; leaves obovate, tapering into a long petiole; capsule oblong or obconical, obscurely 4-sided, longer than the calyx-lobes. — Ditches and muddy places, common. June – Sept. — Stems 6′ – 12′ long.

14. **L. spathulata,** Torr. & Gray. Pubescent and somewhat hoary; leaves spatulate-obovate; capsule ovoid; otherwise like the preceding. — Margins of pine-barren ponds, Middle Florida. July and August.

+– +– *Petals* 4.

15. **L. natans,** Ell. Smooth; stems diffuse; leaves obovate, acutish, tapering into a long petiole; flowers short-pedicelled; petals roundish, as long as the lobes of the calyx; capsule obtusely 4-angled, narrowed at the base. — Marshes and margins of streams, Florida to North Carolina, and westward. July – Sept. — Resembles No. 13, but is every way larger.

16. **L. arcuata,** Walt. Smooth; leaves lanceolate, narrowed at the base, acute; flowers on peduncles usually longer than the leaves, 2-bracted at the base; calyx-lobes linear-lanceolate, shorter than the obovate petals; capsule clavate, curved. — Muddy margins of ponds, &c., Florida to North Carolina. July. — Stems 4′ – 8′ long.

6. CIRCÆA, Tourn.

Calyx-tube slightly produced beyond the ovary, the limb 2-cleft, deciduous. Petals 2, obcordate. Stamens 2. Style filiform. Capsule obovate, 1 – 2-celled, 1 – 2-seeded, bristly with hooked hairs. — Perennial herbs, with opposite petioled leaves, and small white or rose-colored flowers in loose terminal racemes.

1. **C. Lutetiana,** L. Minutely pubescent; leaves ovate, acuminate, slightly toothed, usually longer than the petioles; bracts none; capsule hispid. — Damp shades along the mountains, Georgia and northward. July. — Stem 1° – 2° high, tumid at the joints. Fruit reflexed. Flowers reddish-white.

2. **C. alpina,** L. Smooth; stem low (3′ – 8′); leaves cordate, coarsely toothed, as long as the petioles; pedicels minutely bracted; capsule hairy. — With the preceding.

7. PROSERPINACA, L.

Calyx-tube 3-sided, 3-lobed. Petals none. Stamens 3. Stigmas 3. Fruit bony, 3-angled, 3-celled, 3-seeded. — Herbs with pinnately dissected leaves, and minute axillary greenish flowers.

1. **P. palustris,** L. Leaves lanceolate, sharply serrate, the submerged ones pectinate. — Ponds and ditches, Florida to Mississippi, and northward. June – August. — Stem 1° – 1½° long, ascending or floating.

2. **P. pectinacea,** Lam. Leaves all pectinate, the divisions filiform; fruit rugose. — With the preceding. — Stem 3′ – 12′ long.

8. MYRIOPHYLLUM, Vail. WATER-MILFOIL.

Flowers monœcious or polygamous. Calyx 4-parted in the sterile flowers, 4-toothed in the fertile ones. Petals 4 or none. Stamens 4 or 8. Stigmas 4, recurved. Fruit bony, 4-celled, 4-lobed, indehiscent. — Aquatic perennial herbs, with the submerged leaves pinnately divided into filiform or capillary segments, and commonly whorled. Flowers minute in the axils of the upper leaves; the uppermost sterile.

* *Stamens* 8: *fruit even or warty.*

1. **M. laxum,** Shuttl. Stem long, slender; leaves 4 in a whorl; the floral ones reduced to minute nearly entire spatulate bracts, shorter than the flowers, which thus form an interrupted almost naked spike; fruit roughened with minute warts, with the lobes obtuse. — Ponds and lakes, Middle and West Florida. — July.

2. **M. verticillatum,** L. Leaves in whorls of 3 – 4, the floral ones linear, pectinately toothed, much longer than the flowers; fruit smooth. — Still water, Florida, and northward. July. — Stem 2° – 4° long, stouter than the last.

* * *Stamens* 4: *fruit ridged and roughened.*

3. **M. heterophyllum,** Michx. Stem thick; leaves 4 – 6 in a whorl, the floral ones crowded, ovate or lanceolate, finely and sharply serrate; the lower

ones pinnatifid; fruit slightly roughened. — Ponds and ditches, Florida, and northward. July.

4. **M. scabratum,** Michx. Stem short (6′–12′); leaves 4–5 in a whorl, the divisions few and capillary, the floral ones linear, pectinately toothed; fruit strongly ridged and roughened. — Shallow ponds, South Carolina, and northward. June and July.

Order 56. CACTACEÆ. (Cactus Family.)

Succulent, shrubby, and commonly leafless and prickly plants, with globular, or columnar and angular, or flattened and jointed stems, and solitary sessile flowers. — Sepals and petals similar, imbricated in several rows, and adherent to the 1-celled ovary. Stamens indefinite, with long filaments, inserted on the base of the petals. Style single: stigmas numerous. Fruit baccate. Seeds numerous, campylotropous, borne on several parietal placentæ. Albumen scanty or none.

1. CEREUS, Haw.

Sepals and petals united into an elongated tube above the ovary. Stamens inserted on the tube. Style filiform. Stigma many-lobed. Seeds without albumen. — Stems elongated, ribbed or angled; the angles bearing tufts of spines and showy flowers.

1. **C. monoclonos,** DC.? Stem tall, columnar, 6–8-angled, green; angles obtuse; spines short, brownish. — Key West. — Stem 4°–10° high. Flowers 6′ long, the inner petals lanceolate, acuminate, white; the outer ones linear, greenish, and gradually diminishing into the scales of the tube. Stigmas 10 or more, filiform, exserted. Stamens included.

2. **C. triangularis,** Haw.? Stem elongated, jointed, 3-sided, rooting at the joints; flowers greenish externally, white within, very large; fruit large, naked. — Key West. — Stem climbing over bushes. Joints 1° long.

2. OPUNTIA, Tourn. Prickly Pear.

Sepals and petals not united into a tube. Stamens inserted into the base of the petals. Style cylindrical. Stigma 3–8-lobed. Seeds with thin albumen. — Stems with flat or rarely cylindrical joints. Leaves fleshy, with tufts of bristly hairs and commonly strong spines in their axils, deciduous. Flowers large, yellow.

1. **O. Ficus-Indicus,** Haw. Stem erect, spreading; joints oval and obovate; leaves subulate, bristly in the axils, without spines; fruit bristly, obovate, red within, edible. — South Florida. May. — Joints 1° long.

2. **O. vulgaris,** Mill. Stem prostrate; joints obovate, pale; spines few and short; fruit nearly smooth. — Dry sandy soil, Florida and northward, near the coast. June and July.

3. **O. polyantha,** Haw. Stem erect; joints oblong; spines yellow, strong, unequal; flowers numerous around the summit of the joints; stigmas 6. — Key West, and waste places around Apalachicola, Florida. June.

4. **O. Pes-Corvi,** Leconte. Stems prostrate, diffuse; joints small (1′–3′), cylindrical or somewhat flattened, easily separable, spiny; spines by pairs, unequal, elongated; sepals and petals 8–12, cuneate; stigmas 4; fruit small, fleshy, bristly, 1–2-seeded. — Barren sandy places along the coast, Florida and Georgia. May. — Stems 1°–2° long.

Order 57. GROSSULACEÆ. (Currant Family.)

Spiny or unarmed shrubs, with alternate palmately veined and lobed leaves, without stipules, and with axillary racemose or clustered flowers. — Calyx-tube adherent to the ovary, the limb 5-lobed. Petals 5, small. Stamens 5. Ovary 1-celled, with 2 parietal placentæ. Styles more or less united. Fruit a 1-celled, many-seeded berry. Seeds anatropous, with the minute embryo at the base of hard albumen.

1. RIBES, L. Currant. Gooseberry.

Character same as the order.

* *Stems spiny and commonly bristly: peduncles 1–3-flowered.*

1. **R. Cynosbati,** L. Leaves on slender petioles, slightly cordate, roundish, 3–5-lobed, pubescent; peduncles 2–3-flowered; stamens and single style not longer than the broad and short calyx-tube; petals obovate; berry mostly prickly. — Mountains of North Carolina, and northward. July. — Stem smooth or bristly. Leaves 1′–2′ in diameter.

2. **R. rotundifolium,** Michx. Leaves small, smoothish, roundish, 3–5-lobed, often acute at the base, on slender petioles; peduncles 1–2-flowered; stamens and 2-parted style longer than the narrow-cylindrical calyx-tube; petals spatulate; berry small, smooth. — Mountains of North Carolina, and northward. — Shrub 3°–4° high, often unarmed. Leaves ½′–1′ in diameter.

3. **R. gracile,** Michx. Axillary spine very short; leaves on slender petioles, pubescent on both sides, the lobes acute, incised, and acutely toothed; peduncles long, capillary, erect, 1–2-flowered; calyx smooth, tubular-campanulate. — Mountains of Tennessee.

* * *Stems without spines or bristles: racemes many-flowered.*

4. **R. prostratum,** L'Herit. Leaves long-petioled, deeply cordate, with about 5 spreading incised and serrate lobes, smooth; racemes erect; style 2-cleft; berry glandular-bristly. — Mountains of North Carolina, and northward. May and June. — Stems reclining. Racemes 3′–5′ long. Leaves 2′–3′ in diameter.

5. **R. resinosum,** Pursh. Plant clothed in every part with resinous glandular hairs; leaves roundish, 3–5-lobed; racemes erect; bracts linear, longer

than the pedicels; calyx flattish; petals obtusely rhomboidal; fruit hirsute. — Mountains of North Carolina. April and May. (*)

Order 58. LOASACEÆ. (Loasa Family.)

Herbs, commonly armed with bristly barbed and stinging hairs. Leaves alternate, exstipulate. Flowers solitary or clustered. — Calyx-tube adherent to the 1-celled ovary, the limb 5-parted and persistent. Petals 5 or 10, inserted on the throat of the calyx. Stamens mostly indefinite, in several parcels, inserted with the petals. Styles united. Capsule irregularly dehiscent. Seeds few or many, borne on 3–5 parietal placentæ, commonly with scanty albumen.

1. MENTZELIA, Plum.

Calyx-tube cylindrical or club-shaped. Petals convolute in the bud. Stamens commonly 30 or more, the exterior ones often dilated and sterile. Styles 3, united to the middle. Capsule 3-valved at the summit, with 3 parietal placentæ. Cotyledons broad and flat. — Stems branching. Leaves toothed or sinuate-pinnatifid. Flowers yellow.

1. **M. Floridana,** Nutt. Leaves deltoid-ovate, toothed, truncate and 2-lobed at the base; stamens about 30; capsule 6-seeded. — South Florida. — Stem 1° high. Flowers small, golden-yellow.

Order 59. TURNERACEÆ. (Turnera Family.)

Herbs or shrubs, with alternate simple exstipulate leaves, and solitary axillary flowers. — Calyx free from the 1-celled ovary, colored, 5-lobed, deciduous. Petals 5, inserted on the throat of the calyx, convolute in the bud. Stamens 5, inserted into the tube of the calyx below the stamens. Styles 3, distinct, simple, 2-cleft or 2-parted. Stigmas 3 or 6, many-parted. Placentæ 3, parietal. Capsule loculicidally 3-valved, many-seeded. Seeds anatropous, arilled. Embryo in fleshy albumen. — Flowers sessile, or on bracted or jointed pedicels.

1. PIRIQUETA, Aublet.

Calyx campanulate. Styles 3, 2-cleft or deeply 2-parted. Stigmas 6, many-parted. Capsule opening to the base into 3 valves. — Herbs with stellate pubescence. Flowers on jointed pedicels, yellow.

1. **P. fulva.** Hirsute with fulvous hairs, and stellate-tomentose; stem simple or sparingly branched; leaves lanceolate, obtuse, mostly serrate or toothed, nearly sessile; pedicels (at least the upper ones) longer than the leaves,

often bibracteolate; petals obovate; styles 2-parted. (Turnera cistoides, *Ell.* P. villosa, *Aub.?*) — Dry light soil, Florida to North Carolina. June and July. ♃ — Stem 1° high. Leaves 2′–3′ long, the lowest ones broader.

2. **P. tomentosa,** H. B. K. Stellate-tomentose throughout; stem simple; leaves nearly sessile, oblong, acute or obtuse, obscurely crenate, hoary beneath; pedicels shorter than the leaves. — South Florida. — Stem 1° high. Leaves rather rigid, 1′ long.

3. **P. glabra.** Stem slender, branching, smooth; leaves smooth, linear, entire, the floral ones small and bractlike; pedicels several times longer than the leaves, and, like the calyx, stellate-tomentose; petals spatulate; styles 2-cleft. (Turnera glabra, *DC.?*) — South Florida. — Stem 1°–2° high. Leaves 2′ long. Flowers 1′ in diameter.

Order 60. PASSIFLORACEÆ. (Passion-Flower Family.)

Climbing herbs or shrubs, with alternate mostly stipulate leaves, and axillary often showy flowers. — Calyx of 4–5 more or less united sepals, commonly bearing at the throat 4–5 petals, and a crown of slender filaments in one or more rows. Stamens 4–5, monadelphous below and enclosing the stipe of the ovary. Ovary 1-celled, with 3–4 parietal placentæ. Styles 3–4, clavate. Fruit fleshy or baccate. Seeds numerous, anatropous, included in a pulpy sac. Embryo in the axis of fleshy albumen.

1. PASSIFLORA, L. Passion-Flower. May-Pop.

Calyx-tube very short. Filaments of the crown in 2 or more rows. Fruit baccate. — Tendrils axillary. Peduncles jointed, 1-flowered.

1. **P. incarnata,** L. Leaves palmately 3-lobed, acute, serrate; petioles biglandular; peduncles 3-bracted; sepals with a horn-like point below the apex, whitish within; filaments of the crown in about 5 rows, the two outer ones as long as the sepals; berry large, oval. — In open or cultivated ground, common. June and July. ♃ — Fruit yellowish, as large as a hen's egg. Flowers purple and white.

2. **P. lutea,** L. Leaves cordate, broadly 3-lobed at the summit, with the lobes rounded and entire; petioles glandless; flowers small, greenish-yellow; peduncles by pairs, bractless; filaments of the crown in 3 rows, shorter than the sepals. — Woods and thickets, Florida to Mississippi, and northward. June and July. ♃ — Fruit oval, purple, ½′ in diameter.

3. **P. suberosa,** L. Leaves smooth, slightly fringed on the margins, 5-nerved at the base, divided above the middle into 3 ovate entire acute lobes, the middle lobe largest; petioles short, biglandular above the middle; peduncles commonly by pairs; flowers greenish; petals none; filaments of the crown shorter than the sepals, purple at the base; fruit purple. — South Florida.

4. **P. angustifolia,** Swartz. Lower leaves mostly 3-lobed, with the lobes lanceolate, obtuse, and entire; upper leaves simple, lanceolate, and acute; petioles short, biglandular; flowers small, solitary or by pairs, the peduncles short and bractless; petals none. — South Florida. — Stem 1° – 2° long. Leaves sometimes entire. Flowers 4″ – 6″ wide, yellowish. Berry purple, as large as a pea. Filaments of the crown in 2 rows. Stamens occasionally 4. Stipules subulate.

5. **P. Warei,** Nutt. Leaves on short biglandular petioles; the lower ones 3-lobed, acute; the upper ovate or oblong, undivided; stipules subulate; peduncles commonly by pairs, about the length of the petioles; flowers very small; segments of the crown few, filiform, shorter than the calyx. — South Florida. — Probably identical with P. pallida of the West Indies.

Order 61. CUCURBITACEÆ. (Gourd Family.)

Herbs, with succulent stems, climbing by means of lateral tendrils. Leaves alternate, palmately veined or lobed. Flowers axillary, monœcious or diœcious. — Calyx 5-toothed, adnate to the ovary. Corolla of 5 distinct, or more or less united petals, coherent with the calyx. Stamens 3 – 5, free or variously united. Anthers long, straight or tortuous, commonly connate. Ovary 1 – 3-celled. Stigmas 3. Fruit (*pepo*) fleshy or pulpy, 1 – 3-celled. Seeds compressed, anatropous, without albumen. Cotyledons leafy.

Synopsis.

1. BRYONIA. Petals 5, distinct, or united at the base. Ovary 3-celled. Fruit 3-seeded, smooth.
2. MELOTHRIA. Petals 5, united into a campanulate corolla. Ovary 3-celled. Fruit many-seeded, smooth.
3. SICYOS. Petals 5, united at the base into a rotate corolla. Ovary 1-celled. Fruit 1-seeded, hispid.

1. BRYONIA, L.

Flowers monœcious or diœcious. Calyx 5-toothed. Petals 5, distinct, or united at the base. Stamens 5, triadelphous: anthers tortuous. Style mostly 3-cleft. Fruit ovate or globose, smooth, few-seeded.

1. **B. Boykinii,** Torr. & Gray. Rough-pubescent; leaves broadly cordate, 3 – 5-lobed; the lateral lobes entire or toothed, the middle one cuspidate; sterile and fertile flowers intermixed, 3 – 5 in a cluster, short-pedicelled; styles united; fruit 3-seeded; the seeds 3-toothed at the base. — River-banks, Georgia, and westward. June and July. — Stems elongated. Flowers greenish-white. Berry crimson.

2. MELOTHRIA, L.

Flowers polygamous or monœcious. Calyx of the fertile flower narrowed above the ovary; the sterile ones campanulate. Petals 5, united into a campanu-

late corolla. Stamens 5, triadelphous: anthers tortuous, connate, at length separate Style single, with a cup-shaped disk surrounding its base. Stigmas 3. Fruit oval, smooth, many-seeded.

1. **M. pendula,** L. Stem filiform, smooth; leaves rough, cordate, with 3 – 5 angular-toothed lobes; sterile flowers in small racemes; the fertile solitary, on long peduncles; fruit oval, blackish, drooping. — Light soil, Florida to North Carolina, and westward. May – August. — Flowers small, yellow.

3. SICYOS, L.

Flowers monœcious. Calyx flattish, with 5 subulate or minute teeth. Petals 5, united below into a rotate corolla. Stamens 5, monadelphous or triadelphous. Ovary 1-celled, 1-ovuled. Style slender. Stigmas 3. Fruit membranaceous, bristly, 1-seeded. — Annual herbs. Sterile and fertile flowers mostly from the same axil.

1. **S. angulatus,** L. Plant hairy and clammy; leaves thin, cordate, with 3 – 5 acuminate denticulate lobes; sterile flowers racemose; the fertile ones in peduncled clusters, whitish. — River-banks, Florida, and northward. June – August.

ORDER 62. SURIANACEÆ. (SURIANA FAMILY.)

A downy shrub, with alternate crowded exstipulate leaves, and perfect yellow flowers, in small axillary bracted racemes. — Calyx 5-parted, persistent; the base filled with a fleshy torus, which bears the ovaries, petals, and stamens. Petals 5, oblong-obovate. Stamens 10, hairy, the alternate ones short and sterile. Ovaries 5, distinct, with 2 erect collateral orthotropous ovules in each. Styles 5, each arising from the central angle of the ovary near the base, thickened upwards. Carpels 1-seeded, indehiscent. Seeds without albumen. Embryo hooked.

1. SURIANA, Plum.

Character same as the order.

1. **S. maritima,** L. — Sea-shore, South Florida. — Shrub 4° – 6° high. Leaves linear-spatulate, fleshy, imbricated near the summit of the branches. Racemes shorter than the leaves.

ORDER 63. CRASSULACEÆ. (ORPINE FAMILY.)

Succulent herbs, with exstipulate leaves, and regular perfect and mostly cymose flowers. Sepals 3 – 20, more or less united at the base, persistent. Petals as many as the sepals, inserted on the base of the calyx, imbricated in the bud, rarely wanting. Stamens as many, or twice as many, inserted

with the petals. Ovaries as many as the sepals, separate or united below. Carpels several-seeded, opening along the inner suture. Seeds anatropous. Embryo straight, in thin albumen.

Synopsis.

1. SEDUM. Carpels distinct. Sepals 4–5. Stamens 8 or 10.
2. DIAMORPHA. Carpels united at the base. Sepals 4. Stamens 8.
3. PENTHORUM. Carpels united above the middle. Sepals 5. Stamens 10.

1. SEDUM, L. Orpine. Stone-crop.

Sepals 4–5. Stamens 8 or 10. Carpels distinct, many-seeded, with an entire scale at the base of each. — Herbs smooth and fleshy.

1. **S. telephioides,** Michx. Stem stout, erect or ascending, very leafy throughout; leaves alternate, oblong-obovate, toothed or entire; the lower ones mostly tapering into a petiole, the upper sessile; cymes compact, erect, many-flowered; petals flesh-color, ovate-lanceolate, acuminate; stamens 10; carpels acuminate, pointed with the slender style. — Dry rocks, along the mountains, Georgia, and northward. June. — Stem 7′–12′ high. Leaves 1′–1½′ long.

2. **S. ternatum,** Michx. Stems low (3′–8′), branching at the base, ascending; lowest leaves crowded, spatulate or obovate, 3 in a whorl; the upper ones scattered, oval or lanceolate; cyme composed of 3 recurved branches; stamens 8, those of the central flowers 10. — Mountain-rocks, Georgia, Tennessee, and northward. May and June. ♃ — Flowers white.

3. **S. pulchellum,** Michx. Stems ascending (4′–12′ long); leaves very numerous, alternate, linear, obtuse; cyme composed of several recurved or spreading branches; flowers pale purple; sepals much shorter than the petals; stamens 8, those of the central flowers mostly 10; carpels tapering into the long and slender style. — With the preceding. May and June.

4. **S. Nevii,** Gray. Stems low (3′–5′), ascending; leaves alternate, scattered, linear-clavate, obtuse; flowers sessile, scattered along the widely spreading or recurved branches of the simple cyme; bracts linear, longer than the flowers; sepals linear-lanceolate, acutish, as long as the lanceolate white petals; stamens 8, shorter than the petals; anthers purplish-brown; carpels tapering into the short subulate style. — Rocky cliffs at Tuscaloosa, Alabama, *Rev. R. D. Nevius.* April and May.

2. DIAMORPHA, Nutt.

Sepals 4, very short. Petals 4, oval, concave. Stamens 8. Carpels 4, united below the middle, at length spreading, 4–8-seeded. — A small (1′–4′) succulent biennial herb, branching from the base. Leaves terete, fleshy. Flowers white.

1. **D. pusilla,** Nutt. — On flat rocks in the upper districts, Alabama to North Carolina. March and April.

3. PENTHORUM, Gronov.

Sepals 5. Petals 5, often wanting. Stamens 10. Carpels 5, united into a 5-celled capsule, spreading at the summit, which falls away at maturity. Seeds numerous. — Perennial (not fleshy) herbs, with alternate serrate leaves, and yellowish flowers on one side of the revolute branches of the simple cyme.

1. **P. sedoides,** L. Stem erect, 1°–2° high; leaves lanceolate; petals commonly none. — Ditches and muddy places, common. July–Sept.

ORDER 64. SAXIFRAGACEÆ. (SAXIFRAGE FAMILY.)

Calyx of 4–5 more or less united sepals, free, or more or less adherent to the ovary, persistent. Petals as many as the sepals, rarely wanting. Stamens as many, or 2–4 times as many, inserted with the petals on the calyx. Ovaries 2 or sometimes 3–4, commonly united below, and separate at the summit. Seeds few–many. Embryo straight, in the axis of fleshy albumen.

Synopsis.

SUBORDER I. SAXIFRAGEÆ. Herbs. Petals imbricated in the bud. Stipules adnate to the petiole, or none.

* Stamens as many as the sepals.

1. LEPUROPETALON. Styles 3. Capsule 1-celled, beakless.
2. HEUCHERA. Styles 2. Capsule 1-celled, 2-beaked.
3. BOYKINIA. Styles 2. Capsule 2-celled, 2-beaked.

* * Stamens twice as many as the sepals.

+ Capsule 2-celled.

4. SAXIFRAGA. Flowers perfect. Stamens 10. Leaves entire or lobed.
5. ASTILBE. Flowers polygamous. Stamens 10. Leaves ternately compound.

+ + Capsule 1-celled.

6. TIARELLA. Stamens 10. Petals 5, entire.
7. MITELLA. Stamens 10. Petals 5, pinnatifid.
8. CHRYSOSPLENIUM. Stamens 8-10. Petals none.

SUBORDER II. ESCALLONIEÆ. Shrubs. Petals valvate in the bud. Stipules none. Leaves alternate.

9. ITEA. Stamens and petals 5. Flowers in a dense raceme.

SUBORDER III. HYDRANGIEÆ. Shrubs. Petals valvate or convolute in the bud. Leaves opposite. Stipules none.

10. HYDRANGEA. Petals valvate. Stamens 8-10. Styles distinct.
11. DECUMARIA. Petals valvate. Stamens 20 or more. Styles united.
12. PHILADELPHUS. Petals convolute. Stamens 20 or more. Styles 4. Capsule 4-valved.

1. LEPUROPETALON, Ell.

Calyx-tube turbinate, cohering with the lower portion of the ovary, 5-parted. Petals 5, minute, spatulate. Stamens 5, very short. Styles 3. Capsule globu-

lar, 1-celled, with 3 parietal placentæ, many-seeded, loculicidally 3-valved at the apex. — A very small ($\frac{1}{2}'$ high) tufted annual herb, with alternate spatulate leaves, and solitary terminal white flowers.

1. **L. spathulatum,** Ell. — Close damp soil, Georgia (near Savannah) and South Carolina. March and April.

2. HEUCHERA, L. Alum-root.

Calyx campanulate, coherent with the base of the ovary, 5-cleft. Petals 5, spatulate. Stamens 5. Styles 2. Capsule 1-celled, with 2 parietal placentæ, many-seeded, 2-beaked, opening between the beaks. Seeds rough or hispid. — Perennial herbs, with erect scape-like stems. Leaves chiefly radical, long-petioled, roundish cordate, lobed or toothed. Stipules adnate to the petioles. Flowers cymose-panicled.

* *Calyx equal-sided.*

1. **H. Americana,** L. Rough-pubescent; scape leafless; leaves crenately or acutely 7 - 9-lobed and toothed, the teeth mucronate; panicles long, narrow, loosely-flowered; calyx as long as the white spatulate petals, much shorter than the stamens and very slender styles. — Shady rocky places in the middle and upper districts, Mississippi to North Carolina, and northward. April and May. — Scape 2° - 3° high, sometimes with one or two leaves. Leaves 2′ - 4′ wide, on petioles 4′ - 12′ long.

2. **H. villosa,** Michx. Scape bracted or somewhat leafy, and, like the petioles and lower surface of the leaves, shaggy with long spreading rusty hairs; leaves sharply 5 - 7-lobed and toothed, panicle loose; flowers minute; petals white, very narrow, about as long as the stamens; styles elongated. (H. caulescens, *Pursh.*) — Mountains of North Carolina and Tennessee. June and July. — Scape 1° - 3° high. Leaves 3′ - 8′ wide. Flowers about a line in length.

3. **H. Curtisii,** Gray. Scape and petioles smooth; leaves slightly lobed; branches of the panicle long, racemose, spreading; petals purple? spatulate-lanceolate, scarcely longer than the calyx; stamens slightly pubescent. (H. caulescens, *β, Torr. & Gray.*) — Buncombe County, North Carolina, *Curtis.* — Flowers larger than the last.

* * *Calyx oblique.*

4. **H. pubescens,** Pursh. Glandular-puberulent; stem (2°) leafy; leaves round-cordate, acutely 5 - 7-lobed and toothed, with the sinus closed; stipules obtuse, fringed; flowers nodding; calyx ovoid, yellowish-green, the ovate lobes obtuse; petals spatulate, white, and, like the smooth stamens and styles, included. — Mountains of North Carolina, and northward. June and July.

5. **H. hispida,** Pursh. Hirsute or minutely glandular-pubescent; leaves 5 - 9-lobed, the lobes short, rounded, and mucronately toothed; panicle contracted; the short branches few-flowered; petals broadly spatulate, purple, rather shorter than the more or less exserted stamens; styles at length much exserted. — High mountains of North Carolina. May and June. — Scape 2° - 3° high, sometimes smoothish, as well as the petioles. Flowers larger than any of the preceding.

3. BOYKINIA, Nutt.

Calyx turbinate, coherent with the ovary, 5-cleft. Petals deciduous. Stamens 5, short. Styles 2 – 3. Capsule 2 – 3-celled, with a central many-seeded placenta, 2-beaked, opening between the beaks. Seeds smooth. — Erect leafy perennial herbs, with alternate round-cordate palmately lobed and toothed leaves, and small flowers in corymbose cymes.

1. **B. aconitifolia,** Nutt. Glandular-hairy, or the upper surface of the long-petioled 5 – 7-lobed leaves smoothish; cymes fastigiate, clammy; flowers secund, white; teeth of the calyx triangular-ovate. — Mountains of Georgia, North Carolina, and Tennessee. June and July. — Stem 1° – 2° high.

4. SAXIFRAGA, L. Saxifrage.

Calyx free, or cohering with the base of the ovary, deeply 5-cleft. Petals 5, commonly deciduous. Stamens 10. Styles 2. Capsule 2-celled, 2-beaked, opening between the beaks. Seeds numerous, smooth. — Lowest leaves clustered.

* *Stems leafy.*

1. **S. leucanthemifolia,** Michx. Hairy and clammy; leaves spatulate, coarsely toothed, tapering into a long winged petiole; the upper ones linear; panicle diffuse; petals clawed, unequal, white, the 3 larger ones spotted with yellow. — Mountains of North Carolina. July. — Stem 10′ – 20′ high.

* * *Stems naked, scape-like.*

2. **S. erosa,** Pursh. Leaves oblong, tapering to the base, sharply toothed; scape clammy-pubescent; panicle long, slender, loosely flowered; sepals reflexed, nearly as long as the oval white petals; stigmas sessile. — Shady banks of streams on the mountains of North Carolina, and northward. July. — Scape 1° – 3° high. Leaves 8′ – 12′ long.

3. **S. Virginiensis,** Michx. Pubescent; leaves somewhat fleshy, obovate, crenately toothed; scape clammy; panicle cymose, dense-flowered; sepals erect, not half as long as the oblong obtuse white petals; styles short. — Rocks on the mountains of Georgia, and northward. April and May. — Scape 4′ – 12′ high.

4. **S. Careyana,** Gray. Smooth or pubescent; leaves broadly ovate, crenately or sharply toothed, abruptly contracted into a slender petiole; scape slender; panicle loosely flowered; sepals spreading, half as long as the lanceolate-oblong, white, faintly spotted petals; filaments filiform. — Moist shady rocks, on the high mountains of North Carolina. June. — Plant 6′ high.

5. **S. Caroliniana,** Gray. Glandular-pubescent; leaves all radical, deltoid or ovate, coarsely toothed, abruptly contracted into a margined petiole; bracts of the scape few; panicle diffuse; petals ovate, white, with 2 pale spots below the middle, twice the length of the reflexed sepals; filaments club-shaped; carpels turgid, free from the calyx, at length widely spreading. — Damp shady places on the mountains of North Carolina. May and June. — Scape 6′ – 12′ high.

5. ASTILBE, Hamilton.

Flowers polygamo-diœcious. Calyx campanulate, 5-parted, nearly free from the ovary. Petals 5, spatulate, withering-persistent. Stamens 10, exserted. Styles 2. Capsule 2-celled, few-seeded. Seed-coat loose and thin. — Perennial herbs, with ternately compound leaves, and small yellowish-white flowers, in panicled racemes.

1. **A. decandra,** Don. — Banks of streams among the mountains of Georgia and North Carolina. June – August. — Stem 3° – 5° high. Leaves twice or thrice ternately compound; the leaflets mostly cordate-ovate, sharply lobed and toothed. Stigmas of the sterile flowers and the stamens and petals of the fertile ones smaller or rudimentary.

6. TIARELLA, L. False Mitre-wort.

Calyx campanulate, nearly free from the ovary, 5-parted. Petals 5, entire. Stamens 10. Styles 2. Capsule membranaceous, 2-valved, the valves very unequal, 1-celled, few-seeded. Seeds globular, smooth. — Perennial herbs, with scape-like stems, chiefly radical and petioled leaves, and small racemose flowers.

1. **T. cordifolia,** L. Leaves round-cordate, crenately or acutely lobed and toothed, hairy above, pubescent beneath, on long hairy petioles; scape (6′ – 12′ high) naked, or bearing 1 – 2 alternate leaves above the middle; racemes simple or branched, many-flowered; petals oblong, white or purplish. — Rocky woods and banks, Mississippi, and northward along the mountains. April and May.

7. MITELLA, Tourn. Mitre-wort.

Calyx coherent with the base of the ovary, 5-cleft. Petals 5, pinnatifid. Stamens 10. Styles 2. Capsule 2-beaked, 1-celled, 2-valved at the apex, many-seeded. Seeds smooth, borne on two parietal placentæ. — Perennial herbs, with broadly cordate and lobed leaves, and small flowers in a terminal raceme.

1. **M. diphylla,** L. Hairy; radical leaves cordate, acute, coarsely serrate and slightly 3-lobed, on long petioles; stem-leaves 2, opposite, sessile; raceme slender, loosely many-flowered. — Shady woods, on the mountains of North Carolina, and northward. May. — Stem 6′ – 12′ high. Flowers white.

8. CHRYSOSPLENIUM, Tourn. Golden Saxifrage.

Calyx-tube coherent with the ovary, 4 – 5-lobed; the lobes obtuse and yellow within. Petals none. Stamens 8 – 10, very short, inserted on a conspicuous disk. Styles 2. Capsule very short, 2-lobed, 1-celled, with 2 parietal placentæ, 2-valved at the apex, many-seeded. — Smooth and succulent herbs, with roundish leaves, and axillary flowers.

1. **C. Americanum,** Schweinitz. Stems prostrate, forking; leaves mostly opposite, roundish, slightly lobed; flowers solitary, greenish. — Cold and shady

streams, among the mountains, Georgia, and northward. April and May. ♃ — Stems 4′ – 6′ long.

9. ITEA, L.

Calyx campanulate, 5-cleft, free from the ovary. Petals 5, lanceolate. Stamens 5, shorter than the petals. Styles 2, united. Capsule 2-celled, 2-furrowed, septicidally 2-valved, several-seeded. — A shrub with simple oblong or oval serrate pubescent leaves, and close mostly drooping racemes of white fragrant flowers terminating the branches.

1. **I. Virginica,** L. — Swamps, Florida to Mississippi, and northward. May and June. — Shrub 4° – 10° high.

10. HYDRANGEA, Gronov.

Calyx-tube hemispherical, 8 – 10-ribbed, coherent with the ovary; the limb 4 – 5-toothed, persistent. Petals ovate, valvate in the bud. Stamens 8 – 10, filiform. Capsule crowned with the 2 diverging styles, 2-celled, many-seeded, opening at the apex between the styles. — Erect shrubs, with opposite petioled leaves, without stipules, and whitish or purplish flowers, in ample compound cymes; the marginal flowers mostly sterile, with the calyx-lobes enlarged and showy.

1. **H. arborescens,** L. Smoothish; leaves ovate, acute or acuminate, serrate, mostly rounded or cordate at the base; cymes crowded, flat-topped; sterile flowers few or none. (H. vulgaris, *Michx.* H. cordata, *Pursh.*) — Banks of streams, Florida to Mississippi, and northward. June and July. — Shrub 4° – 8° high. Leaves 3′ – 6′ long.

2. **H. radiata,** Walt. Leaves ovate, acuminate, serrate, mostly cordate at the base, white-tomentose beneath; cymes flat-topped; sterile flowers few. — Rich soil, Georgia, Carolina, and Tennessee. May and June. — Shrub 4° – 8° high.

3. **H. quercifolia,** Bartram. Young branches and leaves densely tomentose; leaves oval, sharply 5-lobed, serrate; cymes clustered, forming a close oblong panicle; sterile flowers large, numerous. — Shady banks, Florida, Georgia, and westward. May and June. — Shrub 3° – 6° high. Leaves 4′ – 8′ long. Sterile flowers whitish, turning purple.

11. DECUMARIA, L.

Flowers all fertile. Calyx-tube turbinate, coherent with the ovary, 7 – 10-toothed. Petals valvate in the bud, oblong. Stamens 21 – 30. Styles united, persistent. Stigma thick, 7 – 10-rayed. Capsule 10 – 15-ribbed, 7 – 10-celled, bursting at the sides; the thin partitions at length separating obliquely into numerous chaffy scales. Seeds numerous, suspended. — A smooth climbing shrub, with opposite ovate or oblong entire or serrate leaves, and numerous odorous white flowers in compound terminal cymes.

1. **D. barbara,** L. — Banks of streams, Florida to North Carolina, and westward. May and June. — Leaves shining, sometimes pubescent. Capsule, with the persistent style and stigma, urn-shaped, pendulous.

12. PHILADELPHUS, L. Syringa.

Calyx-tube turbinate, cohering with the ovary, the limb 4 – 5-parted, persistent. Petals 4 – 5, convolute in the bud. Stamens 20 – 40, shorter than the petals. Styles mostly 4, more or less united. Capsule mostly 4-celled, loculicidally 4-valved, many-seeded. — Shrubs with simple opposite 3 – 5-ribbed leaves, without stipules, and large white solitary or cymose flowers.

1. **P. grandiflorus,** Willd. Branches and leaves pubescent; leaves ovate or ovate-oblong, acuminate, sharply serrate; flowers solitary, or 2 or more in a terminal cyme; calyx-lobes ovate, acuminate, much longer than the tube. — Banks of streams, Florida to North Carolina. April and May. — Shrub 6° – 10° high, with long and slender branches.

2. **P. inodorus,** L. Smooth; leaves entire or nearly so, ovate or ovate-oblong, acute; calyx-lobes ovate, acute, as long as the tube. — Upper districts of Alabama to South Carolina. May. — Flowers smaller than in the last.

3. **P. hirsutus,** Nutt. Hairy; leaves small, ovate, acute, sharply serrate; flowers 1 – 3 together, terminal, and on short lateral branches; calyx-lobes ovate, as long as the tube. — North Carolina and Tennessee. — A small shrub. Leaves 1′ long. Flowers $\frac{1}{2}$′ wide.

Order 65. HAMAMELACEÆ. (Witch-Hazel Family.)

Trees or shrubs, with alternate leaves, deciduous stipules, and clustered or spiked, often polygamous or monœcious flowers. — Calyx-tube coherent with the base of the ovary. Petals 4 – 5, long and linear, or none. Stamens twice as many as the petals, with the alternate ones sterile, or numerous and perfect. Styles 2. Capsule woody, 2-celled, opening at the summit. Seeds anatropous, bony, 1 – 2 in each cell. Embryo large and straight, in scarce albumen.

Synopsis.

1. HAMAMELIS. Calyx-lobes and petals 4. Fertile stamens 4. Ovules solitary in each cell, suspended.
2. FOTHERGILLA. Calyx 5 – 7-toothed. Petals none. Stamens numerous, all fertile. Ovules solitary, suspended.
3. LIQUIDAMBAR. Calyx and corolla none. Flowers polygamous or monœcious, capitate. Stamens numerous. Ovules several.

1. HAMAMELIS, L. Witch-Hazel.

Calyx 2 – 3-bracted, 4-parted. Petals 4, long and linear. Stamens 8, the alternate ones short and sterile. Styles 2. Capsule loculicidally 2-valved at the apex, the outer coat separating from the inner one, which encloses the seed, but soon splits elastically into 2 valves. Seeds large, bony. — Shrubs. Leaves short-petioled. Flowers yellow, clustered.

1. **H. Virginica,** L. — Low woods, Florida to Mississippi, and northward. November. — A large shrub. Leaves obovate or oval, oblique, crenate-toothed, pubescent; flowers appearing when the leaves are falling.

2. FOTHERGILLA, L.

Calyx truncate, obscurely 5–7-toothed. Petals none. Stamens numerous, slender, perfect. Styles 2. Capsule 2-lobed, 2-celled, 2-valved at the apex, with a single bony seed in each cell. — A shrub, with oval or obovate leaves, and white odorous flowers in terminal bracted spikes, appearing before the leaves.

1. **F. alnifolia,** L. — Swamps, Florida to North Carolina. March and April. — Shrub 2°–4° high. Leaves smooth, or tomentose beneath, toothed at the summit. Capsule hairy.

3. LIQUIDAMBAR, L. Sweet-Gum.

Flowers monœcious, in globular 4-bracted spiked heads. Calyx and corolla none. Stamens very numerous. Styles 2. Ovary 2-celled, with numerous ovules in each cell. Capsules united in a close head, woody, 2-beaked, opening between the beaks, 1–2-seeded. Seeds wing-angled. — Trees. Heads of sterile flowers sessile, crowded; those of the fertile flowers on long nodding peduncles.

1. **L. Styraciflua,** L. Branches with corky wings; leaves roundish, with 5–7 acuminate serrate spreading lobes. — Swamps, Florida to Mississippi, and northward. March. — A large tree. The exposed juice hardens into a fragrant gum.

Order 66. UMBELLIFERÆ. (Parsley Family.)

Herbs, with chiefly hollow and furrowed stems, alternate mostly compound leaves, with dilated or clasping petioles, and umbelled flowers. — Calyx-tube coherent with the ovary; the limb 5-lobed or obsolete. Petals 5, mostly incurved, inserted with the 5 stamens on the edge of the disk that crowns the ovary. Styles 2. Fruit composed of 2 indehiscent carpels (*mericarps*), suspended from a filiform axis (*carpophore*), and cohering by their inner face (*commissure*); each furnished with 5 primary ribs, and often with as many secondary ones; the intervening spaces (*intervals*) usually containing channels (*vittæ*), which are filled with aromatic oil. Seed solitary, suspended. Embryo minute, at the base of horny albumen. — Umbels and partial umbels (*umbellets*) commonly subtended by an involucre or involucel.

Synopsis.

§ 1. Inner face of the seed flat, or nearly so.

* Umbels simple, or one growing from the summit of another. Stems creeping.

1. HYDROCOTYLE. Fruit orbicular, flattened. Leaves rounded.
2. CRANTZIA. Fruit globular. Leaves linear, fleshy.

* * Umbels capitate (flower sessile).

3. SANICULA. Fruit bristly, globular. Flowers polygamous. Involucel none.
4. ERYNGIUM. Fruit scaly, turbinate. Flowers perfect, bracted. Heads involucelled.

* * * Umbels compound (flowers pedicelled).

+– Fruit with bristly ribs; the bristles in a single row.

5. DAUCUS. Fruit 9-ribbed. Leaves finely 2-3-pinnate.

+– +– Fruit smooth or slightly roughened.

++ Fruit wingless, laterally compressed, or twin.

6. CICUTA. Flowers white. Fruit subglobose. Calyx-limb 5-toothed.
7. CRYPTOTÆNIA. Flowers white. Fruit oblong. Calyx-limb obsolete. Divisions of the leaves lanceolate.
8. LEPTOCAULIS. Flowers white. Fruit ovate, rough. Calyx-limb obsolete. Divisions of the leaves filiform.
9. DISCOPLEURA. Flowers white. Fruit ovoid. Calyx-limb 5-toothed. Divisions of the leaves filiform.
10. HELOSCIADIUM. Flowers white. Fruit oblong. Calyx-limb obsolete. Involucre 1-3-leaved, or none.
11. SIUM. Flowers white. Fruit globose. Calyx-teeth minute or none. Involucre 5-6-leaved. Leaves pinnate.
12. BUPLEURUM. Flowers yellow. Fruit ovoid-oblong. Leaves simple.
13. ZIZIA. Flowers yellow. Fruit ovoid-oblong; the intervals with 3 vittæ.
14. THASPIUM. Flowers yellow or dark purple. Fruit ovoid or oblong; the intervals with single vittæ.
15. LIGUSTICUM. Flowers white. Fruit elliptical, with several vittæ in each interval.

++ ++ Fruit dorsally compressed, winged on the margins.

= Margins of the fruit double-winged. Flowers white. Leaves pinnately compound.

16. ANGELICA. Carpels 3-ribbed on the back; the intervals with single vittæ.
17. ARCHANGELICA. Carpels 3-ribbed on the back; the intervals with 2 or more vittæ.
18. CONIOSELINUM. Carpels 3-winged on the back; the intervals with 2-3 vittæ.

= = Margins of the fruit single-winged.

19. TIEDEMANNIA. Fruit broadly winged. Marginal wings remote from the 3 dorsal ones. Leaves simple, terete.
20. ARCHEMORA. Fruit as in No. 19. Leaves pinnate or ternate.
21. HERACLEUM. Fruit with all the ribs equidistant. Marginal flowers sterile. Plant woolly.

§ 2. Inner face of the seed concave.

22. CHÆROPHYLLUM. Fruit linear-oblong, narrowed towards the apex.
23. OSMORRHIZA. Fruit linear-clavate, narrowed towards the base.

1. HYDROCOTYLE, Tourn. Marsh Pennywort.

Calyx-teeth obsolete. Petals not incurved. Fruit laterally compressed, orbicular. Carpels 5-ribbed, the dorsal and lateral ones often obsolete, the intermediate ones enlarged. Vittæ none. — Low marsh herbs, with slender creeping stems, and peltate or reniform leaves. Umbels small, axillary. Flowers white.

1. **H. Americana,** L. Smooth; leaves orbicular-reniform, crenately 7-lobed; umbels sessile, 3-5-flowered; fruit 2-ribbed. — Mountains of North Carolina, and northward. July. — Stems stoloniferous. Leaves very thin, glossy.

2. **H. umbellata,** L. Smooth; leaves orbicular, peltate, obscurely lobed, crenate; umbels globose, on peduncles commonly longer than the petioles; fruit 2-ribbed on each side. — Wet places, Florida to Mississippi, and northward. May. — Leaves 1′ wide.

3. **H. ranunculoides,** L. Smooth; leaves orbicular-reniform, crenately 3 – 5-lobed; umbels few-flowered, on peduncles much shorter than the petioles, mostly nodding in fruit; fruit obscurely ribbed. — Springs and muddy places, Florida to North Carolina, and westward. May and June. — Petioles 6′ – 12′ long. Peduncles 1′ long.

4. **H. interrupta,** Muhl. Smooth; leaves orbicular, peltate, crenate; umbels proliferous, the nearly sessile clusters forming an interrupted spike; fruit strongly ribbed. — Wet places, Florida to Mississippi, and northward. June. — Petioles longer than the peduncles.

5. **H. repanda,** Pers. Pubescent; leaves broadly ovate, truncate or slightly cordate at the base, glandular-serrate; umbels capitate, few-flowered, shorter than the petioles; fruit strongly ribbed. — Low grounds, Florida to North Carolina, and westward. July.

2. CRANTZIA, Nutt.

Calyx-teeth obsolete. Petals roundish. Fruit globular. Carpels 5-ribbed, the lateral ribs thickened and corky. Vittæ single in the intervals, with 2 on the commissure. — Small creeping marsh herbs, with fleshy linear leaves, and small whitish flowers in axillary umbels.

1. **C. lineata,** Nutt. (Hydrocotyle lineata, *Michx.*) — Muddy banks, near the coast, Florida to Mississippi, and northward. July. — Leaves 1′ long, with cross partitions, narrowed towards the base, obtuse. Involucre 5 – 6-leaved.

3. SANICULA, Tourn.

Calyx 5-toothed, persistent. Fruit globose, without ribs, armed with hooked prickles; the carpels not separating spontaneously, each with 5 vittæ. — Perennial erect branching herbs, with palmately-divided long-petioled leaves, and polygamous flowers in small heads, disposed in a loose expanding cyme.

1. **S. Marilandica,** L. Leaves 5 – 7-parted, the divisions lobed and toothed; heads many-flowered; sterile flowers numerous on slender pedicels; styles long, recurved. — Dry woods, Georgia, and northward. May. — Stem 2° – 3° high.

2. **S. Canadensis,** L. Leaves 3 – 5-parted, the divisions lobed and toothed; heads few-flowered; the sterile flowers (1 – 3) nearly sessile; styles short and straight. — Dry woods, common. May. — Stem 1° – 2° high. Branches of the cyme long and spreading.

4. ERYNGIUM, Tourn. BUTTON-SNAKEROOT.

Calyx 5-toothed, persistent. Styles slender. Fruit turbinate, covered with scales or tubercles, without ribs or vittæ. — Herbs, with spiny or bristly mostly

lobed or toothed leaves, and white or blue bracted flowers closely sessile in dense heads.

** Fruit scaly: stems erect.*

1. **E. yuccæfolium,** Michx. Leaves linear, concave, bristly or somewhat spiny on the margins, parallel-veined; leaves of the involucre mostly entire, shorter than the broadly ovate head; bracts entire. — Pine barrens, mostly in damp soil, Florida, and northward. June. ♃ — Stem 2°–3° high. Leaves distant, the lowest ones 1°–1½° long. Flowers white.

2. **E. Ravenelii,** Gray. Leaves linear, elongated, nearly terete, grooved on the upper surface, obscurely denticulate; leaves of the involucre 3-cleft, as long as the head; bracts 3-cleft, spine-pointed, longer than the flowers. — Low pine barrens, near the head-waters of Cooper river, South Carolina. *Ravenel.* Sept. and Oct. — Stem 1½°–3° high. Flowers white.

3. **E. Virginianum,** Lam. Leaves linear-lanceolate, flat; the lowest ones spiny-serrate with the teeth incurved, or nearly entire, veiny; the upper narrower, spiny or pinnatifid; leaves of the involucre (blue) 3–5-cleft, longer than the head; bracts 3-cleft, as long as the flowers. — Marshes, Florida to Mississippi, and northward. July. ♃ or ② — Stem 2°–3° high. Flowers blue.

4. **E. prælatum,** Gray. Leaves lanceolate, flat, veiny, serrate; the upper ones linear, spiny-toothed; leaves of the involucre 2–3 times as long as the head; bracts tricuspidate, barely as long as the mature calyx. (E. Virginianum, *Ell.*) — Fresh marshes near the coast, Georgia to North Carolina. August. — Stem 4°–6° high. Lowest leaves 1°–2° long and 2½′–3′ wide. Flowers white.

5. **E. virgatum,** Lam. Leaves short, oblong or oblong-ovate, serrate, the upper ones toothed or divided; leaves of the involucre entire, or with 2–4 bristly teeth, longer than the head; bracts 3-toothed. (E. ovalifolium, *Michx.*) — Pine-barren swamps, Florida to North Carolina, and westward. August. — Stem 1°–2° long. Leaves 2′–3′ long, sometimes cordate. Flowers blue.

** * Fruit granular: stems diffuse.*

6. **E. aromaticum,** Baldw. Stems clustered, prostrate, very leafy; leaves spatulate, pinnately lobed, cartilaginous on the margins; the 3 upper lobes broad and spine-pointed, the lower ones scattered and bristle-like; leaves of the involucre 3-cleft, longer than the globose head; bracts 3-toothed. — Dry pine barrens, East and South Florida. Sept. — Stems 1′ long.

7. **E. Baldwinii,** Spreng. Small, prostrate, branching; leaves thin; the earliest ones ovate, sharply serrate or toothed, long-petioled, the others 3-parted, with the middle segment lanceolate and commonly 3-toothed; leaves of the involucre subulate, longer or shorter than the oblong head; bracts spatulate, obtuse, barely exceeding the calyx. — Low sandy pine barrens, Georgia, Florida, and westward. September. ① ? — Stems 5′–10′ long. Flowers blue.

8. **E. Cervantesii,** Laroch. Stems prostrate, diffusely branched; earliest leaves lanceolate or oblong, entire, or sparingly toothed, long-petioled, the others sessile, 3-parted, with the segments linear or filiform and entire; leaves

of the involucre subulate, as long as the hemispherical head; bracts subulate acute, twice as long as the calyx. (E. filiforme, *Shuttl.*) — Damp sandy soil along the coast of West Florida. July and August. ② — Stems 1° – 2° long. Leaves somewhat fleshy. Flowers very small, blue.

5. DAUCUS, Tourn. Carrot.

Calyx 5-toothed. Corolla irregular. Fruit ovate or oblong; the carpels with 9 unequal bristly or prickly ribs, and a single vitta under the larger ribs. — Annual or biennial herbs, with pinnately finely dissected leaves and involucre, and white or yellowish flowers.

1. **D. pusillus,** Michx. Annual; stem rough with rigid reflexed hairs; leaves twice pinnate, with the divisions linear; bristles of the fruit barbed. — Dry sterile soil, Florida to South Carolina, and westward. June. — Stem 1° – 3° high. Umbels long-peduncled.

6. CICUTA, L. Water-Hemlock.

Calyx 5-toothed. Fruit roundish. Carpels with 5 flattish equal ribs; the intervals with single vittæ, and 2 on the inner face. — Smooth perennial marsh herbs, with hollow stems, and twice pinnately or ternately divided leaves. Involucels many-leaved. Flowers white.

1. **C. maculata,** L. Stem large (3° – 6° high), purplish; leaflets ovate-lanceolate, acute, coarsely serrate; umbels large, many-rayed. — Marshes, Florida to Mississippi, and northward. July. — Plant very poisonous.

7. CRYPTOTÆNIA, DC.

Calyx-teeth obsolete. Fruit oblong, contracted at the sides. Carpels equally 5-ribbed, with very slender single vittæ in each interval, and one under each rib. — A smooth perennial herb, with trifoliolate leaves on long petioles. Leaflets large, ovate, doubly serrate and mostly lobed. Rays of the umbel few and very unequal. Involucre none. Involucels filiform. Flowers white.

1. **C. Canadensis,** DC. (Chærophyllum Canadense, *Pers.*) — Rich shady soil, North Carolina to Mississippi, and northward. July. — Stem 2° high.

8. LEPTOCAULIS, Nutt.

Calyx-teeth obsolete. Fruit ovate, compressed on the sides, often rough or bristly. Carpels 5-ribbed, the intervals with single vittæ, and 2 on the face. — Slender smooth herbs, with finely dissected leaves, and white flowers. Umbels few-rayed. Involucre none. Involucel few-leaved.

1. **L. divaricatus,** DC. Annual; stem (6′ – 18′ high) widely branched; leaves 2 – 3-pinnatifid, with the divisions filiform; umbel 3 – 4-rayed. (Sison pusillum, *Michx.*) — Dry sandy soil, Florida to North Carolina. April. — Fruit very small, roughened with minute scales.

9. DISCOPLEURA, DC.

Calyx-teeth subulate, persistent. Fruit ovate; the carpels strongly 3-ribbed on the back, and with two lateral ribs united with a thick corky margin. Intervals with single vittæ. — Smooth annuals, growing in marshes. Leaves pinnately dissected, with the filiform divisions often whorled. Involucre and involucel conspicuous. Flowers white.

1. **D. capillacea,** DC. Umbels 3 - 10-rayed; leaves of the involucre mostly 3 - 5-cleft; fruit ovate. (Ammi capillaceum, *Michx.*) — Brackish marshes, Florida to Mississippi, and northward. June and July. — Stem 1° - 2° high, much branched. Earliest leaves simple, or simply pinnate.

2. **D. costata.** Stem tall, branching above; leaves of the involucre 10 - 12, many-parted; fruit ovate, deeply sulcate. (Ammi costatum, *Ell.*) — Swamps of the Ogeechee River, Georgia. October and November. — Stem 4° - 5° high. Fruit larger than in No. 1.

3. **D. Nuttallii,** DC. Umbels many-rayed; leaves of the involucre 5 - 6, entire; fruit globose. — Tampa Bay, Florida, and westward. — Stem 2° - 6° high.

10. HELOSCIADIUM, Koch.

Calyx-teeth 5, or obsolete. Fruit ovate or oblong, flattened on the sides, the carpels equally 5-ribbed. Intervals with single vittæ. Flowers white.

1. **H. nodiflorum,** Koch. Stems prostrate or creeping; leaves pinnate; leaflets ovate-lanceolate, serrate; umbels short-peduncled, opposite the leaves; involucre 1 - 2-leaved or none; involucel 5 - 6-leaved. (Sium nodiflorum, *L.*) — Ditches, &c. around Charleston. Introduced. April - June. — Stems 2° long.

11. SIUM, L.

Calyx-teeth small or obsolete. Fruit ovate or globular, flattened at the sides; the carpels with 5 equal corky ribs. Intervals usually with several vittæ. — Marsh or aquatic perennial herbs. Leaves pinnate; the immersed ones dissected into numerous capillary divisions. Involucre several-leaved. Flowers white.

1. **S. lineare,** Michx. Leaflets varying from linear to oblong, finely and sharply serrate; calyx-teeth minute; fruit globular, strongly ribbed. — Along streams, commonly in water, Florida to Mississippi, and northward. July. — Stem 2° high.

12. BUPLEURUM, Tourn.

Calyx-teeth obsolete. Fruit flattened at the sides, or twin, ovate-oblong. Carpels 5-ribbed, the intervals with or without vittæ. — Smooth herbs, with entire simple leaves, and yellow flowers.

1. **B. rotundifolium,** L. Leaves ovate, perfoliate; umbel 5-rayed; involucre none; leaves of the involucel 5, ovate, mucronate. — Fields, North Carolina. — Introduced,

13. ZIZIA, DC.

Calyx-teeth obsolete. Fruit ovoid-oblong, twin. Carpels 5-ribbed, the cross section nearly orbicular. Vittæ 3 in each interval, and 4 on the commissure. — A smooth perennial herb, with 2 – 3-ternately compound leaves, and yellow flowers.

1. **Z. integerrima,** DC. Stem slender; leaflets oblong-ovate, entire; rays of the umbel long and slender; involucre none. (Smyrnium integerrimum, *L.*) — Rocky woods, Mississippi, and northward. May and June. — Stem 1° – 2° high.

14. THASPIUM, Nutt.

Calyx-teeth short or obsolete. Fruit ovoid or oblong, somewhat flattish at the sides. Carpels commonly equally and strongly 5-ribbed. Intervals with single vittæ. — Perennial herbs, with 1 – 2-ternately-divided leaves (the lowest often entire), and yellow or purple flowers. Involucre none.

** Calyx-teeth short, obtuse.*

1. **T. barbinode,** Nutt. Stem pubescent at the joints; leaves 1 – 2-ternate, more or less pubescent; leaflets cuneate-ovate, entire toward the base, toothed above, the terminal one narrowed into a long stalk; fruit oblong, the ribs mostly unequal; flowers pale yellow. — River-banks, West Florida, and northward. May and June. — Stem branching above, 2° – 3° high. Leaflets $\frac{1}{2}'$ – $1'$ long, often 2 – 3-lobed.

2. **T. pinnatifidum,** Gray. Branches and umbels roughish-puberulent; leaves 1 – 3-ternate; leaflets 1 – 2-pinnatifid, the lobes linear or oblong; fruit oblong, narrowly 8 – 10-winged, the intervals minutely scabrous. — Mountains of North Carolina and Tennessee. — Stem 2° – 5° high.

** * Calyx-teeth obsolete.*

3. **T. aureum,** Nutt. Leaves 1 – 2-ternate; the leaflets oblong-lanceolate, sharply serrate, the lateral ones unequal at the base; fruit oval, the ribs thick or winged. (Smyrnium aureum, *L.*) — Rich soil, Florida, and northward. May. — Stem 1° – 2° high. Lowest leaves sometimes cordate and undivided. Flowers yellow.

4. **T. trifoliatum,** Gray. Leaves crenate; the lowest ones usually simple and cordate, the others trifoliolate; leaflets ovate-lanceolate, mostly obtuse at the base; fruit roundish, ribbed or winged. (Smyrnium cordatum, *Walt.* S. atropurpureum, *Lam.*) — Rich soil, Florida to Mississippi, and northward. June. — Stem 1° – 2° high. Flowers yellow or dark purple.

15. LIGUSTICUM, L. Nondo.

Calyx-teeth minute or obsolete. Fruit elliptical, nearly terete. Carpels with 5 acute equal and somewhat winged ribs. Vittæ numerous. Involucre short, 2 – 6-leaved. — Perennial herbs. Leaves 1 – 3-ternately divided. Flowers white.

1. **L. actæifolium,** Michx. Stem tall (3° – 6°), smooth, branched; leaves 3-ternately divided; leaflets ovate, toothed; umbels very numerous, pani-

cled; fruit ovate-oblong, the ribs wing-like; vittæ 3 in each interval, and 6 on the commissure. —Rich soil, in the upper districts. July and August. — Root large, aromatic.

16. ANGELICA, L.

Calyx-teeth obsolete. Fruit flattened. Carpels 5-ribbed, the 2 lateral ribs dilated into wings. Vittæ single in each interval, and 2 – 4 on the commissure. Seed adherent to the pericarp. — Chiefly perennial herbs, with compound leaves, no involucre, and white flowers.

1. **A. Curtisii,** Buckley. Stem smooth; leaves twice ternate, or the divisions quinate; leaflets thin, ovate or ovate-lanceolate, often slightly cordate, sharply toothed; fruit broadly winged; commissure with 2 vittæ. — High mountains of North Carolina. August. — Stem 3° high. Petioles large and sheathing.

17. ARCHANGELICA, Hoffm.

Calyx-teeth short. Fruit flattened. Carpels ribbed as in Angelica. Vittæ very numerous, entirely surrounding the loose seed. — Perennial herbs. Leaves 1 – 2-ternate, with pinnate divisions. Leaflets toothed. Upper petioles inflated. Involucre none. Involucel many-leaved. Flowers white.

1. **A. hirsuta,** Torr. & Gray. Upper part of the stem and umbels softly pubescent; leaflets oblong-ovate, sharply serrate; fruit pubescent. (A. triquinata, *Ell.* Ferula villosa, *Walt.*) — Dry hills, Florida to Tennessee, and northward. July. — Stem 2° – 3° high.

2. **A. dentata,** Chapm. Stem slender, smooth; umbels slightly pubescent; leaflets lanceolate, strongly veined, coarsely toothed; fruit smooth. — Dry pine barrens, Florida. September. — Stem 2° – 3° high, branching above; teeth of the small ($\frac{1}{2}'$) leaflets spreading.

18. CONIOSELINUM, Fischer.

Calyx-teeth obsolete. Fruit oval. Carpels somewhat flattened on the back, 5-winged, with the lateral wings twice as broad as the dorsal ones. Vittæ 2 – 3 in each interval, and 4 – 8 on the commissure. — Smooth herbs. Leaves thin, finely 2 – 3-pinnately compound. Involucre none. Involucels subulate. Flowers white.

1. **C. Canadense,** Torr. & Gray. Leaflets pinnatifid, with linear-oblong lobes, the petioles inflated; rays of the umbel slender; fruit broadly oval. — High mountains of North Carolina, and northward. August. — Stem 3° – 5° high.

19. TIEDEMANNIA, DC.

Calyx 5-toothed. Fruit obovate, compressed. Carpels with 5 sharp and slender ribs, winged on the margins. Intervals with single vittæ, and 2 on the commissure. — A smooth erect perennial herb, with terete petioles destitute of leaflets. Involucre and involucel 5 – 6-leaved. Flowers white.

1. **T. teretifolia,** DC. (Sium teretifolium, *Ell.*) — Pine-barren swamps, Florida to North Carolina, and westward. August. — Stem 2° – 4° high. Petioles with cross partitions.

20. ARCHEMORA, DC.

Calyx 5-toothed. Fruit oval or obovate, flattened on the back. Carpels with 5 slender obtuse ribs, winged on the margins. Intervals with single vittæ, and 4 – 6 on the commissure. — Smooth herbs, with pinnately-divided leaves, and white flowers. Involucre few-leaved or none. Involucel many-leaved.

1. **A. rigida,** DC. Leaves pinnate; the leaflets (3 – 9) varying from linear to oblong, variously toothed or entire. (Sium rigidus, tricuspidatum, and denticulatum, *Ell.*) — Swamps, Florida to Mississippi, and northward. August and September. — Stem 2° – 5° high.

2. **A. ternata,** Nutt. Leaves ternate, with the leaflets linear, entire and strongly nerved; the lowest ones on very long petioles. (Neurophyllum longifolium, *Torr. & Gray.*) — Low or swampy pine barrens, Florida to North Carolina. November. — Stem slender, 2° high. Petioles of the lower leaves 1° or more long. Root bearing tubers.

21. HERACLEUM, L.

Calyx-teeth minute. Fruit oval, flat. Carpels with the 2 lateral ribs distant from the 3 dorsal ones, and near the dilated margins. Vittæ shorter than the carpels, single in the intervals, and usually 2 on the commissure. — Stout perennial herbs, with pinnately or ternately divided or lobed leaves on inflated petioles, and white flowers. Involucre few-leaved. Involucel many-leaved. Marginal flowers commonly larger and radiant.

1. **H. lanatum,** Michx. Villous; leaves very large, ternate; leaflets broadly cordate, deeply lobed, hoary beneath. — Mountains of North Carolina. June. — Stem 4° – 8° high, strongly furrowed.

22. CHÆROPHYLLUM, L.

Calyx-teeth obsolete. Fruit oblong or linear, tapering at the apex, contracted at the sides. Carpels deeply furrowed on the commissure, with 5 obtuse equal ribs. Intervals with single vittæ. — Herbs, with compound finely dissected leaves, and white flowers. Involucre few-leaved or none. Involucel many-leaved.

1. **C. procumbens,** Lam. Stem weak, slightly pubescent; leaves ternately divided; the divisions bipinnatifid, with oblong obtuse lobes; umbel sessile, of 2 – 3 long rays; involucel 4 – 5-leaved, few-flowered; fruit oblong, abruptly pointed, finely ribbed. — Shady river-banks, Mississippi to North Carolina, and northward. April and May. ① or ② — Stem 6′ – 18′ long.

2. **C. Teinturieri,** Hook. & Arn. More pubescent; lobes of the leaves narrower and acute; fruit oblong-linear, more strongly ribbed and tapering at the apex; otherwise like the last. — Banks of the Apalachicola River, Florida, and westward. March and April. — Stem erect, 1° high.

23. OSMORRHIZA, Raf.

Calyx-teeth obsolete. Fruit clavate, angled. Carpels with bristly ribs, furrowed on the commissure. Vittæ none. — Perennial herbs with aromatic roots. Leaves 2-ternate, with the leaflets ovate, toothed or serrate. Umbels opposite the leaves. Involucre and involucel 2 – 5-leaved. Flowers white.

1. **O. brevistylis,** DC. Styles very short, conical; fruit somewhat tapering at the apex. — Mountains of North Carolina and northward. June. — Plant hairy, 1° – 1½° high. Leaflets thin, acuminate, pinnatifid.

ORDER 67. ARALIACEÆ. (GINSENG FAMILY.)

Umbelliferous herbs, shrubs, or trees, nearly as in the last order; but the flowers (chiefly polygamous) with flat and spreading petals, the styles and carpels of the baccate fruit usually more than two, and the embryo at the apex of copious fleshy albumen.

1. ARALIA, L. SARSAPARILLA.

Calyx-teeth 5, or none. Petals, stamens, and spreading styles 5. Berry drupaceous, 5-lobed, 5-celled. — Herbs or shrubs. Leaves compound. Umbels corymbed or panicled. Flowers whitish. Berry black.

* *Stems herbaceous.*

1. **A. racemosa,** L. Stem smooth, leafy, widely branched; leaves ternately decompound; leaflets large, broadly cordate, doubly serrate; umbels very numerous, panicled. — Rich woods along the mountains, Georgia, and northward. July. — Root thick, aromatic. Stem 3° – 5° high.

2. **A. hispida,** Michx. Stem leafy, somewhat shrubby at the base, bristly; leaves bipinnately compound; leaflets lanceolate-ovate, sharply serrate; umbels in naked peduncled corymbs. — Mountains of North Carolina, and northward. June and July. — Stem 1° – 2° high.

3. **A. nudicaulis,** L. Stem naked, short, bearing 3 long-peduncled umbels at the apex; leaf solitary, radical, long-petioled, ternately divided, the divisions quinate; leaflets oblong-ovate, acuminate, serrate. — Mountains of North Carolina, and northward. May. — Root long and slender, aromatic. Stem 1° high, much shorter than the leaves.

* * *Stems woody.*

4. **A. spinosa,** L. Stem simple, prickly; leaves very large, crowded at the summit of the stem, bipinnately compound; leaflets thick, ovate, crenate, glaucous beneath; umbels in very large hoary panicles. — Swamps, Florida to Mississippi, and northward. July and August. — Stem 10° – 15° high.

2. PANAX, L. GINSENG.

Calyx minutely 5-toothed. Petals and stamens 5. Styles 2 – 3. Berry fleshy, drupaceous, 2 – 3-lobed, 2 – 3-celled. — Low herbs, with naked stems, bearing at

the summit a single long-peduncled umbel of greenish flowers, surrounded by a whorl of three 3 – 7-foliolate leaves. Berry red or greenish.

1. **P. quinquefolium,** L. Root fusiform; leaflets 5 – 7, oblong-obovate, serrate, stalked; styles 2, berry crimson. — Rich woods along the mountains, Georgia, and northward. July. — Stem 1° high. Leaflets 2′ – 3′ long.

2. **P. trifolium,** L. Root globose; leaflets 3 – 5, lanceolate, serrate, sessile; styles 3; berry greenish. — With the last. — Plant 4′ – 6′ high.

Order 68. CORNACEÆ. (Dogwood Family.)

Trees or shrubs, with simple, entire or rarely toothed exstipulate leaves, and perfect or polygamous flowers. — Calyx coherent with the 1 – 2-celled ovary, 4 – 5-toothed. Petals 4 – 5, valvate in the bud, sometimes wanting. Stamens 4 – 10, inserted into the margin of the disk that crowns the ovary. Ovules solitary, anatropous, pendulous. Fruit a berry-like 1 – 2-celled, 1 – 2-seeded drupe. Embryo nearly as long as the fleshy albumen. Cotyledons large and foliaceous.

1. CORNUS, Tourn. Dogwood. Cornel.

Flowers perfect. Calyx 4-toothed. Petals and stamens 4. Stigma capitate. Drupe 2-celled, 2-seeded. — Shrubs or low trees. Leaves and branches opposite (except No. 1). Flowers in naked spreading cymes, or capitate, and subtended by a colored involucre.

** Flowers white, in a loose open cyme: involucre none.*

1. **C. alternifolia,** L'Herit. Leaves oval, abruptly acute at each end, pale and pubescent beneath, long-petioled, and, like the greenish striped branches, alternate; drupes deep blue. — Banks of streams, Florida, and northward. May. — A widely branching shrub, or small tree.

2. **C. stricta,** Lam. Leaves ovate or oblong, abruptly acute or acuminate, smooth, whitish beneath; cymes flat or depressed at the summit; drupes and anthers pale blue. — Swamps, Florida to North Carolina, and westward. April. — A shrub or small tree. Branches brown.

3. **C. paniculata,** L'Herit. Leaves smooth, ovate-lanceolate, acuminate, paler beneath; cymes convex at the summit, somewhat panicled, loose-flowered; drupes white, depressed-globose. — North Carolina and northward. May and June. — Shrub 4° – 8° high. Branches gray.

4. **C. sericea,** L. Leaves ovate or elliptical, smooth above, the lower surface, like the purplish branches and close depressed cyme, silky-pubescent; drupes pale blue. — Low woods, Florida to Mississippi, and northward. May. — Shrub 6° – 10° high.

5. **C. asperifolia,** Michx. Leaves short-petioled, lanceolate-ovate or oblong, acute, very rough on both sides, as well as the branchlets and flat cymes;

drupes pale blue. — Dry woods, Florida to South Carolina, and westward. June. — A shrub or small tree. Branches slender and sometimes warty.

* * *Flowers capitate, subtended by a white 4-leaved involucre.*

6. **C. florida,** L. Leaves ovate-lanceolate or ovate, at length smooth on both sides; flowers greenish; drupes ovoid, red. — Oak woods, common. May. — A small tree. Wood hard and close-grained. Leaves of the involucre emarginate and thickened at the summit, showy.

2. NYSSA, L. Sour Gum.

Flowers dicœcio-polygamous. Sterile flowers in many-flowered heads or cymes. Calyx 5-parted. Stamens 5–10. Petals and pistil none. Fertile flowers single or few in a head. Calyx-limb 5-toothed or obsolete. Petals 5, minute, or wanting. Stamens 5–10, mostly sterile. Style long, revolute. Stigma decurrent. Ovary 1-celled. Drupe 1-seeded. — Trees or shrubs. Leaves alternate, entire or rarely toothed, finely reticulated. Flowers small, greenish, on axillary or lateral peduncles.

* *Sterile flowers in loose clusters.*

1. **N. multiflora,** Wang. Leaves oval or obovate, mostly acute, tomentose when young, at length shining above; fertile peduncles long and slender, 3–8-flowered; drupes ovoid, dark blue. — Rich upland woods, Florida to Mississippi, and northward. May. — A tree 30°–50° high, with widely spreading branches. Leaves rather thick, dark green, 2′–5′ long. Fertile peduncles 1½′–3′ long. Drupe ½′ long.

2. **N. aquatica,** L. Branches, leaves, &c. tomentose when young, at length nearly smooth; leaves short-petioled, varying from lanceolate to orbicular, obtuse, sometimes slightly cordate; peduncles short, the fertile ones 1–2-flowered; drupes oval, blue. — Ponds and swamps, Florida to North Carolina, and westward. April and May. — A large tree, or in pine-barren swamps sometimes a mere shrub. Leaves 1′–2′ long. Peduncles ½′–1′ long. Drupe smaller than in the last.

3. **N. uniflora,** Walt. Leaves large, long-petioled, ovate or oblong, acute, entire or sharply toothed, tomentose beneath, the lower ones often cordate; fertile peduncles elongated, 1-flowered; drupes ovate-oblong, dark blue. (N. tomentosa, *Michx.* N. grandidentata, *Michx. f.*) — Deep swamps and ponds, Florida to North Carolina, and westward. April. — A large tree. Leaves 4′–6′ long. Drupe 8″–12″ long.

* * *Sterile flowers capitate.*

4. **N. capitata,** Walt. (Ogeechee Lime.) Leaves large, short-petioled, oblong, oval or obovate, mucronate or acute, tomentose beneath; flowers below the leaves, the fertile ones perfect, solitary, on very short peduncles; drupe oblong, red. — Swamps, Florida and Georgia, near the coast, and westward. — A small tree. Leaves 3′–5′ long. Drupe 1′ long, agreeably acid.

Division II. MONOPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of more or less united petals.

Order 69. CAPRIFOLIACEÆ. (Honeysuckle Family.)

Chiefly trees or shrubs, with opposite leaves, and no stipules. Calyx-tube adherent to the ovary, the limb 4 – 5-toothed or lobed. Corolla tubular or rotate, 4 – 5-lobed. Stamens as many as the lobes of the corolla, and alternate with them, inserted on its tube. Ovary 2 – 5-celled, with 1 – many pendulous ovules in each cell. Fruit mostly baccate or drupaceous. Seeds anatropous. Embryo small, in the axis of fleshy albumen.

Synopsis.

* Corolla tubular. Style slender. Stigma capitate.

1. SYMPHORICARPUS. Corolla campanulate. Berry 4-celled, 2-seeded. Erect shrubs.
2. DIERVILLA. Corolla funnel-shaped. Capsule 2-celled, 2-valved, many-seeded. Erect shrubs.
3. LONICERA. Corolla tubular. Berry 1 – 3-celled. Chiefly woody vines.
4. TRIOSTEUM. Corolla tubular. Drupe bony, 3 – 5-seeded. Herbs.

* * Corolla rotate. Stigmas 3 – 5, sessile. Flowers in cymes.

5. SAMBUCUS. Leaves pinnate. Berry 3 – 5-seeded.
6. VIBURNUM. Leaves simple. Drupe 1-seeded.

1. SYMPHORICARPUS, Dill. Snowberry.

Calyx-tube globose, the limb 4 – 5-toothed, persistent. Corolla campanulate, nearly regular, 4 – 5-lobed. Stamens 4 – 5, inserted on the throat of the corolla. Ovary 4-celled, 2 of the cells with several abortive ovules, the other two with a single suspended fertile ovule in each. Berry 4-celled, 2-seeded. Seeds bony. — Erect shrubs with entire leaves, and white or reddish flowers in axillary spikes or clusters.

1. **S. vulgaris,** Michx. Leaves oval, downy beneath; flowers in small axillary clusters; corolla smoothish within; berries red. (Symphorea glomerata, *Pers.*) — Dry soil among the mountains, Georgia, and northward. July – Sept. — Shrub 2° – 3° high.

2. DIERVILLA, Tourn.

Calyx oblong or cylindrical, narrowed above, with 5 subulate teeth. Corolla funnel-shaped, 5-lobed. Stamens 5. Capsule 2-celled, septicidally 2-valved, many-seeded. — Low shrubs, with ovate or oblong acuminate serrate deciduous leaves, and axillary and terminal cymose flowers.

1. **D. trifida,** Mœnch. Leaves ovate or oblong-ovate, distinctly petioled, pubescent, especially on the veins above; peduncles mostly 3-flowered; capsule

ovoid-oblong, narrowed into a neck above. — Mountains of North Carolina. June. — Stem 2° – 4° high. Flowers greenish-yellow.

2. **D. sessilifolia,** Buckley. Leaves ovate-lanceolate, closely sessile and somewhat clasping; peduncles many-flowered; capsule cylindrical-oblong, narrowed into a short neck above. — With the preceding. — Leaves and capsule larger than in that species.

3. LONICERA, L. Woodbine. Honeysuckle.

Calyx ovoid, 5-toothed. Corolla tubular, 5-cleft, often bilabiate, and gibbous near the base. Stamens 5. Ovary 2 – 3-celled, with several ovules in each cell. Berry 1 – 3-celled, several-seeded. Seeds bony. — Erect or twining shrubs, with entire, often connate leaves. Flowers by pairs or in spiked whorls.

1. **L. sempervirens,** Ait. Stem twining; leaves oblong or lanceolate, pale and tomentose beneath, the upper pair shorter and connate; spikes terminal; whorls distinct; corolla nearly equally 5-lobed, scarlet or orange without, yellow within. (Caprifolium, *Ell.*) — Margins of swamps, Florida, and northward. April – Sept. — Leaves perennial. Corolla 2′ long.

2. **L. grata,** Ait. Stem twining; leaves obovate, glaucous beneath, the 2 or 3 upper pairs connate; whorls of flowers axillary and terminal; corolla bilabiate, the tube long and slender. — Mountains of Carolina, and northward. May. — Young branches often hairy. Corolla 1½′ long, with a red or purplish tube and a white limb, changing to yellow. Berry orange-red.

3. **L. flava,** Sims. Smooth and somewhat glaucous; stem scarcely twining; leaves oval or obovate, the upper pairs connate; whorls of flowers crowded, terminal; corolla slender, bilabiate. — Banks of rivers in the upper districts of Georgia and South Carolina. June and July. — Corolla 1′ long, bright yellow; the 4-cleft limb nearly as long as the tube.

4. **L. parviflora,** Lam. Smooth; stem twining; leaves elliptical, glaucous beneath, all more or less connate; whorls of flowers crowded, peduncled; corolla short, bilabiate, gibbous at the base; stamens hairy below. — Mountains of North Carolina. — June. — Corolla 8″ – 10″ long, yellow and purplish.

4. TRIOSTEUM, L. Fever-wort.

Calyx ovoid, with 5 leafy linear-lanceolate persistent lobes. Corolla tubular, equally 5-lobed, rather longer than the calyx. Stamens 5. Ovary 3-celled, with a single ovule in each cell. Fruit a dry drupe containing 3 bony nutlets. — Perennial hairy herbs, with large leaves, narrowed but connate at the base, and sessile axillary flowers.

1. **T. perfoliatum,** L. Stem soft-hairy; leaves oval, acuminate, entire, hairy above, tomentose beneath; flowers commonly clustered, brownish-purple. — Shady woods in the upper districts. June and July. — Stem 2° – 4° high. Leaves 4′ – 7′ long.

2. **T. angustifolium,** L. Stem hirsute; leaves lanceolate or oblong, acuminate, hirsute above, pubescent beneath; flowers mostly solitary, yellowish. — Shady rich soil among the mountains. June. — Plant smaller than the last.

5. SAMBUCUS, Tourn. Elder.

Calyx-lobes minute or none. Corolla rotate, 5-lobed. Stamens 5. Fruit a globular baccate drupe, containing three 1-seeded nutlets. — Shrubs, with pinnate leaves, and white flowers, in ample terminal cymes.

1. **S. Canadensis,** L. Leaflets 7 – 11, oblong, serrate, smoothish, acute, the lower ones often 3-parted; cymes flat, 5-parted; fruit black. — Low grounds, common. June and July. — Stem 4° – 16° high, the straight young shoots with large pith.

2. **S. pubens,** Michx. Leaflets 5 – 7, oblong, serrate, pubescent beneath; cymes paniculate, pyramidal; fruit red. — Mountains of North Carolina, and northward. June. — Shrub 6° – 10° high. Cymes smaller than in the last.

6. VIBURNUM, L. Haw. Sloe.

Calyx minute, 5-toothed. Corolla rotate or somewhat campanulate, 5-lobed. Stamens 5. Ovary 1 – 3-celled, one of the cells containing a single ovule, the others empty. Drupe baccate, containing a single compressed bony nut. — Shrubs or small trees. Leaves lobed or undivided, the petioles sometimes winged. Flowers in terminal cymes, small, white; the marginal ones occasionally radiant and sterile.

** Sterile and radiant flowers none.*

+ Cymes sessile.

1. **V. prunifolium,** L. Leaves thin, obovate or roundish, mostly obtuse, finely and sharply serrate, smooth and glossy, or the veins beneath and more or less dilated petioles rusty-pubescent; cymes large, 4 – 5-rayed; drupe oblong-ovoid, black. — Dry rich woods, Florida to Mississippi, and northward. April and May. — A small tree. Fruit edible.

2. **V. Lentago,** L. Leaves thin, ovate, acuminate, finely and sharply serrate, smooth above, the lower surface and dilated wavy petioles roughened with minute scales when young; cymes 4-rayed; fruit oval, black. — Mountains of Georgia, and northward. May. — A small tree.

3. **V. obovatum,** Walt. Leaves small, thick, obovate, or obovate-oblong, obtuse, slightly crenate or entire, smooth; cymes 3-rayed; drupe ovoid, black. (V. lævigatum, *Ait.*) — River-banks, Florida to North Carolina, and westward. April and May. — A shrub or small tree. Leaves $\frac{1}{2}'$ – $1'$ long. Cymes small.

+ Cymes peduncled.

++ Leaves palmately lobed.

4. **V. acerifolium,** L. Pubescent; leaves roundish or broadly ovate, rounded or cordate at the base, coarsely serrate, 3-lobed above the middle; cymes 7-rayed; fruit oval, black. — Dry open woods, West Florida to Mississippi, and northward. May and June. — A slender shrub, 2° – 4° high. Leaves 2′ – 3′ wide, becoming smooth above, sometimes almost entire.

++ ++ Leaves undivided.

5. **V. nudum,** L. Rusty-pubescent; leaves varying from oval to lanceolate, entire or nearly so, thick, becoming smooth above, prominently veined be-

neath; cymes rather short-peduncled, 5-rayed; fruit ovoid, blue. — Swamps, common. April and May. — Shrub 8° – 12° high.

6. **V. dentatum,** L. Veins of the leaves beneath with tufted hairs in their axils, otherwise smooth; leaves round-ovate, slightly cordate, coarsely serrate, acute, plicate by the strong impressed veins; cymes long-peduncled, 7-rayed; calyx smooth, with the lobes obtuse; fruit small, roundish, deep blue. — Rich damp soil, West Florida to Mississippi, and northward. March – May. — A large shrub.

7. **V. scabrellum,** Torr. & Gray. Hairy throughout, and the leaves beneath stellate-tomentose; leaves ovate or roundish, often cordate, or rarely cuneate at the base, rather obtusely and coarsely serrate, short-petioled; calyx-lobes hairy, acute; corolla hairy; cymes 7-rayed; fruit roundish, deep blue. — Swamps or rocky hills, Florida to South Carolina, in the lower districts, and westward. May and June. — Shrub 8° – 12° high. Leaves thick, 1′ – 2′ long, or sometimes twice that size.

8. **V. pubescens,** Pursh. Leaves small, ovate or oblong-ovate, coarsely serrate, hairy above, tomentose beneath, on very short petioles or the uppermost subsessile; cymes small, smoothish, 7-rayed; fruit oblong, black. — Mountains of North Carolina. June. — A shrub 2° – 3° high. Leaves 1′ – 2′ long.

* * *Marginal flowers radiant and sterile.*

9. **V. lantanoides,** Michx. Stem smooth and straggling; branches, cymes, and lower surface of the round-ovate, cordate, serrate leaves covered with tufted down; cymes sessile; fruit ovoid, black. — Deep shades on the mountains of North Carolina. June. — Stem 2° – 4° long. Leaves 4′ – 6′ long. Sterile flowers 1′ in diameter.

ORDER 70. RUBIACEÆ. (MADDER FAMILY.)

Herbs, shrubs, or trees. Leaves entire, opposite and united by interposed stipules, or whorled. — Calyx-tube adherent to the ovary, or (in Loganieæ) free; the limb 4 – 6-toothed or lobed, or obsolete. Corolla 4 – 6-lobed, inserted on the throat of the calyx. Stamens 4 – 6, inserted on the tube of the corolla, and alternate with its lobes. Ovary 2 – 10-celled, with 1 – several anatropous or amphitropous ovules in each cell. Style mostly solitary. Albumen hard or fleshy.

Synopsis.

SUBORDER I. COFFEEÆ. Ovules and seed solitary in the cells (except No. 7). Calyx-tube adherent to the ovary.

§ 1. Leaves whorled. Stipules none.

1. GALIUM. Corolla rotate, valvate in the bud. Fruit 2-celled. Herbs.

§ 2. Leaves opposite, rarely three in a whorl, with stipules interposed.

* Herbs. Mature fruit dry. Flowers axillary, single or clustered.

2. SPERMACOCE. Carpels 2, one of them closed by the partition, the other open. Flowers clustered.

3. BORRERIA. Carpels 2, both open on the inner face. Flowers clustered.
4. DIODIA. Carpels 2 - 3, bony and closed. Style 2-cleft. Albumen fleshy.
5. ERNODEA. Carpels 2, somewhat fleshy, closed. Style entire. Albumen horny.

* * Shrubs. Fruit dry. Flowers in globular peduncled heads.

6. CEPHALANTHUS. Carpels 2 - 4, separating at the base, closed.

* * * Shrubs. Fruit fleshy or pulpy. Flowers mostly axillary.

+- Ovaries united, forming a compound berry in fruit.

7. MITCHELLA. Flowers by pairs. Stamens 4. Berry 4-seeded.
8. MORINDA. Flowers numerous. Stamens 5. Berry 1-seeded.

+- +- Ovaries and fruit separate.

++ Albumen horny.

9. CHIOCOCCA. Fruit flattened, even. Stigma entire. Seeds suspended.
10. PSYCHOTRIA. Fruit ribbed. Stigma 2-lobed. Seeds erect.

++ ++ Albumen fleshy.

11. STRUMPFIA. Corolla bell-shaped. Anthers subsessile, united. Leaves whorled.
12. GUETTARDA. Corolla salver-form. Anthers subsessile, separate.
13. ERITHALIS. Corolla subrotate. Filaments slender.

SUBORDER II. CINCHONEÆ. Ovules and seeds numerous in the cells. Calyx-tube adherent to the ovary. Leaves opposite.

* Fruit baccate, indehiscent.

14. HAMELIA. Fruit 5-celled. Stigma entire.
15. RANDIA. Fruit 2-celled. Stigma 2-lobed.

* * Fruit capsular, loculicidally dehiscent.

16. PINCKNEYA. Shrub. Flowers cymose, terminal. Seeds winged.
17. EXOSTEMMA. Shrubs. Flowers solitary, axillary. Seeds winged.
18. OLDENLANDIA. Herbs. Capsule often free from the calyx above. Seeds wingless.

SUBORDER III. LOGANIEÆ. Ovules and seeds numerous in the cells. Calyx free from the ovary. Fruit capsular. Leaves opposite.

* Herbs.

19. SPIGELIA. Corolla tubular. Style single, jointed.
20. MITREOLA. Corolla short, 5-lobed. Styles 2, united above.
21. POLYPREMUM. Corolla short, 4-lobed. Style single.

* * Evergreen woody vines.

22. GELSEMIUM. Corolla campanulate. Seed winged.

1. GALIUM, L.

Calyx-teeth obsolete. Corolla rotate, 3 - 4-lobed. Stamens 3 - 4. Styles 2, united at the base. Stigma capitate. Fruit double, separating into two 1-seeded closed carpels. Albumen horny. — Slender herbs, with square stems and whorled leaves. Flowers minute. — The following species are all perennials.

* *Fruit baccate: peduncles* 1 - 3*-flowered: leaves* 4 *in a whorl.*

1. **G. hispidulum,** Michx. Stems much branched, slightly roughened, hairy at the joints; leaves small (2″ - 6″), rigid, lanceolate-ovate, rough on the margins and veins beneath, acute; berry roughened, bluish-black. (Rubia Brownei, *Michx.*) — Dry sandy soil near the coast, Florida to North Carolina, and westward. May - Sept. — Stems 1° - 2° long. Root yellow. Flowers greenish-white.

2. **G. uniflorum,** Michx. Smooth; stems mostly simple, slender, erect; leaves linear, acute, rough on the margins, punctate beneath; berry smooth, black. — Dry rich soil, Florida to South Carolina, and westward. June and July. — Stems numerous, 1° high. Flowers white.

** * Fruit dry: peduncles commonly 3 – many-flowered.*

3. **G. trifidum,** L. Stems slender, weak, smooth or rough-angled, at length diffuse; leaves 4 – 6 in a whorl, unequal, varying from linear to spatulate-lanceolate, obtuse, smooth, or rough on the margins and midrib, the upper ones often opposite; peduncles 1 – 3-flowered; corolla-lobes and stamens often 3; fruit smooth. (G. tinctorium, *L.*) — Wet places, Florida, and northward. June and July. — Stems 1° – 2° long. Flowers white. Plant dries black.

4. **G. triflorum,** Michx. Stems weak, diffuse, very rough; leaves 4 – 6 in a whorl, lanceolate or elliptical, cuspidate, the upper surface and veins beneath hispid; peduncles mostly 3-flowered; fruit densely uncinate-hispid. — Low shaded places, Florida to Mississippi, and northward. July. — Stems 2° – 3° long. Flowers greenish-white. A smoother form is G. cuspidatum, *Muhl.*

5. **G. pilosum,** Ait. Stems rigid, hairy or roughened on the angles, branching; leaves small (4″ – 8″), 4 in a whorl, oval, slightly pointed, more or less hairy and roughened, dotted; peduncles 2 – 3 times forking; fruit pedicelled, bristly with hooked hairs. (G. Bermudianum, *Ell.*, apparently a diseased state.) — Dry soil, Florida to Mississippi, and northward. June – Sept. — Stem 1° – 3° long. Flowers purple.

6. **G. circæzans,** Michx. Stems erect, smooth or nearly so; leaves large (1′ – 1½′), 4 in a whorl, oval, mostly obtuse, 3-nerved, pubescent; peduncles forking, then spreading and spike-like; fruit bristly with hooked hairs, nearly sessile, nodding. — Dry open woods, Florida to Mississippi, and northward. July. — Stems several, sparingly branched, 1° high. Flowers purple.

7. **G. latifolium,** Michx. Stems erect, smooth; leaves thin, 4 in a whorl, ovate-lanceolate, acute, smooth, 3-nerved, dotted, minutely fringed on the margins; peduncles filiform, 2 – 3 times forking; fruit smooth. — Mountains of North Carolina, and northward. July. — Stems 1° – 1½° high. Leaves 1′ – 2′ long. Flowers purple.

2. SPERMACOCE, L.

Calyx 2 – 4-parted, persistent. Corolla salver-shaped or funnel-shaped, 4-lobed, valvate in the bud. Stamens 4, inserted on the throat of the corolla. Stigma simple or 2-cleft. Fruit composed of two 1-seeded carpels, separating from the apex downward, one of them closed by the partition, the other open. Seeds grooved on the inner face. — Low herbs. Leaves obliquely straight-veined, their bases connected by the bristly-fringed sheathing stipules. Flowers small, in axillary sessile clusters.

1. **S. glabra,** Michx. Stem 4-angled, smooth, erect; leaves lanceolate or oblong, acute, roughened on the margins and veins beneath; clusters globose,

dense, many-flowered; corolla barely longer than the lanceolate calyx-teeth, white, woolly within; stamens and style included; fruit obovate. — Banks of rivers, Florida and westward. June. ♃ — Stem 1°–2° high.

2. **S. Chapmanii,** Torr. & Gray. Stem erect, smooth, slightly angled; leaves oblong-lanceolate, acute, rough above and on the margins; clusters few-flowered; corolla white, hairy within, 2–3 times as long as the calyx; stamens and slender style exserted; fruit turbinate. — Dry soil, Florida, Georgia, and westward. July. ♃ — Stem 6′–12′ high.

3. **S. tenuior,** L. Stem slender, erect or prostrate, branching from the base, terete, smooth; leaves lanceolate, rough above, remote; clusters small, mostly few-flowered; flowers minute, the smooth white corolla barely longer than the subulate teeth of the calyx; stamens and style included; fruit ovoid, hairy. — South Florida, in dry soil. ☉ — Stem 3′–12′ long.

4. **S. involucrata,** Pursh. Stem alternately branched, very hispid; leaves ovate-lanceolate, acuminate, hirsute on both surfaces; stipules with many bristles; heads terminal, involucrate; stamens exserted. — Carolina, *Frazer.* — About a foot high. Leaves somewhat oblique. Flowers white with a very long tube. *Pursh.* (*)

3. BORRERIA, Meyer.

Carpels of the fruit separating from the apex downward, both opening lengthwise on the inner face. Otherwise like Spermacoce, both in character and habit.

1. **B. micrantha,** Torr. & Gray. Annual; stem erect, slender, simple or branched above, 4-angled, smooth; leaves remote, lanceolate, mostly obtuse, narrowed at the base, the upper surface and margins rough, the lateral veins obscure; clusters dense, globose, axillary and terminal; calyx-teeth 4, subulate, longer than the minute (white) corolla; fruit ovoid, hairy. — Waste places, Florida. June–August. — Plant 6′–18′ high, pale green. Leaves 1′ long.

2. **B. podocephala,** DC., var. **pumila.** Stems low (3′–6′), smooth, erect or ascending, branching at the base; leaves smooth, linear, with the margins revolute, those in the axils clustered, the floral ones mostly 4, longer than the solitary terminal long-peduncled globose head; stipular bristles 2–4; fruit pubescent, ovoid, crowned with two subulate spreading calyx-lobes; corolla somewhat funnel-shaped, mostly 3-lobed, smooth within; stigma capitate. — Pine Key, South Florida, *Dr. Blodgett.*

4. DIODIA, L.

Characters chiefly of Spermacoce, but the two bony indehiscent carpels closed on the inner face. — Herbs. Corolla-tube often long and slender. Flowers few or solitary in the axils of the narrow leaves.

1. **D. Virginiana,** L. Perennial; stem and leaves smooth, pubescent, or hirsute; stem prostrate, 4-angled; leaves somewhat fleshy, lanceolate, acute, sessile; flowers single, or 2–6 in a cluster; corolla hairy within, the tube long

and slender; fruit ovoid, strongly ribbed, crowned with the 2 (rarely 4) linear or lanceolate calyx-teeth. (D. tetragona, *Walt.* D. hirsuta, *Pursh.*) — Wet places, Florida to North Carolina, and westward. June – Sept. — Stem 1°–4° long. Flowers white or purplish.

2. **D. teres,** Walt. Annual; stem erect, widely branched from the base, terete, bristly or hairy; leaves linear or lanceolate, acute, rough; flowers solitary or 2–3 together; corolla funnel-shaped; fruit obovate, even, crowned with the 4 short calyx-teeth. (Spermacoce diodina, *Michx.*) — Dry sandy soil, Florida to Mississippi, and northward. July – Sept. — Stem 6′–12′ high, sometimes prostrate. Flowers purplish.

5. ERNODEA, Swartz.

Calyx ovate; the limb 4–6-parted, persistent. Corolla salver-shaped, slender; the lobes 4–6, revolute. Stamens exserted; anthers linear, erect. Style slender, longer than the stamens. Fruit obovate, somewhat fleshy, the two separable horny carpels closed. Seeds furrowed on the inner face. — A somewhat shrubby prostrate and smooth plant, with rigid 3-nerved lanceolate leaves, and solitary sessile axillary flowers.

1. **E. littoralis,** Swartz. — South Florida, along the coast. March and April. — Stems straight, rigid, 4-angled, smooth. Branches short, alternate. Leaves sessile, smooth, acute, the upper ones crowded. Flowers sessile in the upper axils, yellow. Fruit roundish.

6. CEPHALANTHUS, L. Button-Bush.

Calyx obconical, 4-toothed. Corolla tubular, 4-cleft, imbricated in the bud. Stamens 4. Style slender, exserted. Stigma capitate. Fruit dry, obconical, separating from the base into 2–4 one-seeded carpels. Seeds pendulous. Albumen horny. — Aquatic shrubs, with oval or lanceolate leaves, short entire stipules, and white flowers collected into a globose long-peduncled head. Receptacle hairy.

1. **C. occidentalis,** L. Smooth, or the young branches and lower surface of the ovate-oblong acute leaves pubescent; peduncles terminal, and in the upper axils. — Ponds and marshes, Florida, and northward. July and August. — Stem 4°–12° high. Leaves petioled, 3′–5′ long, sometimes 3 in a whorl. Heads 1′ in diameter.

7. MITCHELLA, L.

Flowers by pairs, with their ovaries united. Calyx 4-toothed. Corolla funnel-shaped, 4-lobed, hairy within, valvate in the bud. Stamens 4. Style slender. Stigmas 4. Fruit composed of two 4-seeded fleshy drupes united, crowned with the 4-toothed calyx. — A smooth creeping evergreen shrub, with small broadly-ovate leaves, minute stipules, and fragrant white terminal flowers.

1. **M. repens,** L. — Shady woods, Florida to Mississippi, and northward. March and April. — Stem 1°–2° long. Leaves 6″–10″ long, mostly somewhat cordate, shining above, on slender petioles. Corolla ½′ long. Fruit red.

8. MORINDA, L.

Flowers numerous, their ovaries united into a head. Calyx obscurely toothed. Corolla funnel-shaped, 5-lobed, valvate in the bud. Stamens 5, short. Style slender. Stigmas 2, filiform. Fruit composed of 2–4 one-seeded carpels, all united into a fleshy head. — Trees or shrubs. Leaves opposite or whorled. Stipules within the leaves. Flowers terminal, or opposite the leaves.

1. **M. Roioc,** L. Stem smooth, procumbent or climbing; leaves smooth, lanceolate and acuminate, or obovate oblong and abruptly acute, short-petioled; stipules broad and short; flowers small, crimson. — South Florida. March and April.

9. CHIOCOCCA, Browne.

Calyx ovate, 5-toothed. Corolla funnel-shaped, 5-lobed, valvate in the bud. Stamens 5, inserted on the base of the corolla; anthers linear, included. Style slender. Stigma obtuse. Fruit fleshy, roundish, compressed, composed of two oblong 1-seeded nutlets. Seeds suspended. — Shrubs. Leaves smooth, petioled. Stipules connate. Flowers in axillary racemes, white or yellow.

1. **C. racemosa,** Jacq. Erect; leaves oblong (2′–3′ long), acute at both ends; racemes mostly longer than the leaves, often compound, many-flowered; corolla many times longer than the calyx-teeth, white, turning yellow. — Varies with the stems prostrate and vine-like, leaves smaller ($\frac{1}{2}$′–$\frac{3}{4}$′ long), more rigid, and longer than the few-flowered simple racemes. — South Florida. — Fruit white.

10. PSYCHOTRIA, L.

Calyx ovate, 5-toothed, or nearly entire. Corolla short, funnel-shaped, 4–5-lobed, valvate in the bud. Stamens 4–5. Stigma 2-cleft. Fruit drupaceous, composed of two 1-seeded carpels, mostly ribbed or angled when dry. Seeds erect. Albumen horny. — Shrubs or trees. Leaves opposite, narrowed to a petiole. Stipules sometimes membranaceous and deciduous. Flowers mostly in terminal corymbs or panicles.

1. **P. lanceolata,** Nutt. Leaves lanceolate, acuminate at each end, the lower surface as well as the branches ferruginous-pubescent; stipules clasping, ovate, acute or acuminate, deciduous; corymbs terminal, trichotomous at the base. — South Florida. — Leaves 2′–3′ long. Fruit ovate, red.

2. **P. undata,** Jacq. Leaves oblong, acuminate at each end, undulate, rugose, and, like the branches, smooth; stipules round, membranaceous, deciduous; cyme sessile, twice trichotomous, shorter than the leaves; corolla naked at the throat, hairy at the insertion of the filaments; fruit (dry) ovoid, 10-ribbed. — South Florida. — Leaves about 3′ long. Flowers small.

11. STRUMPFIA, Jacq.

Calyx-limb 5-parted; the lobes acute, erect. Corolla somewhat bell-shaped, deeply 5-parted, the tube very short, the lobes erect, lanceolate, spreading at the apex. Stamens 5, inserted on the base of the corolla; filaments very short;

anthers thick, cohering in an ovoid-oblong 5-angled tube. Style single, as long as the anthers, villous; stigma obtuse, 2-lobed. Ovary 2 – 4-celled with a single ovule in each cell. Fruit a 2 – 4-celled, 1 – 4-seeded drupe. — A low maritime shrub. Branches roughened by the persistent stipules, trichotomous. Leaves ternate, very rigid, linear, obtuse, entire, the margins revolute. Flowers small, in axillary racemes, shorter than the leaves. Corolla pubescent. Drupe small, red.

1. **S. maritima,** Jacq. — South Florida, *Dr. Blodgett.*

12. GUETTARDA, L.

Calyx-tube ovoid, the limb tubular, scarcely toothed. Corolla salver-shaped, 4 – 9-lobed, naked in the throat. Anthers 4 – 9, sessile in the throat of the corolla. Style simple. Stigma mostly capitate. Fruit composed of 4 – 9 one-seeded bony carpels, united. — Trees or shrubs, with ovate or lanceolate leaves, and lanceolate deciduous stipules. Peduncles axillary, forking. Flowers sessile.

1. **G. Blodgettii,** Shuttl. Leaves membranaceous, elliptical, slightly mucronate, feather-veined, rough above, the lower surface, especially the veins, like the branches and cymes, covered with appressed silky hairs; cymes shorter than the leaves, 5 – 10-flowered; flowers silky, tetramerous (rarely trimerous); stigma entire; fruit globose, composed of 4 nutlets surrounded by 8 empty cells; calyx-limb truncate, cleft on one side. — South Florida. — Leaves 1′ – 1½′ long. Fruit as large as a pea.

2. **G. ambigua,** DC. Leaves coriaceous, elliptical or somewhat obovate, cordate at the base, rugose, muricate above, the lower surface, like the branches and cymes, rusty-tomentose; cymes longer than the leaves, several-flowered; fruit globose, 4-seeded, without empty cells. — South Florida. — Leaves larger than in No. 1.

13. ERITHALIS, Browne.

Calyx ovoid, obscurely 4 – 10-toothed. Corolla somewhat rotate, 4 – 10-parted, with linear spreading lobes. Stamens 4 – 10, inserted on the base of the corolla: anthers linear. Style simple. Stigma 2-lipped. Fruit globose, ribbed, composed of 4 – 10 one-seeded bony carpels. Seeds suspended. — Smooth shrubs, with opposite petioled leaves, broad and short mucronate sheathing stipules, and axillary panicled flowers.

1. **E. fruticosa,** L. Leaves coriaceous, oblong, obtuse, shining, narrowed into a petiole; panicles about as long as the leaves, many-flowered; flowers mostly tetramerous, small; fruit 5-ribbed, 6 – 10-celled. — South Florida. — Leaves 2′ – 3′ long. Flowers small, white.

14. HAMELIA, Jacq.

Calyx oval, 5-toothed. Corolla tubular, somewhat 5-angled, 5-lobed. Stamens 5, inserted into the tube of the corolla: anthers linear. Style simple. Stigma obtuse. Berry ovoid, 5-furrowed, 5-celled, many-seeded. Seeds minute,

compressed. — Shrubs, with opposite or whorled oblong petioled leaves, lanceolate stipules, and orange-colored flowers, in axillary and terminal cymes.

1. **H. patens,** Jacq. Pubescent; branches angled; leaves 3 in a whorl, oblong, acute; cymes terminal, peduncled, umbellate; corolla cylindrical, the lobes concave at the apex, and mucronate on the back. — South Florida. — Leaves 3′ – 5′ long. Flowers crimson. Berry black.

15. RANDIA, Houst.

Calyx obovate, 5-toothed. Corolla salver-shaped, 5-lobed. Anthers 5, sessile in the throat of the corolla, linear. Style simple, short. Stigma clavate, 2-lobed. Fruit somewhat dry, 2-celled, many-seeded. Seeds wingless. — Branching mostly spiny shrubs, with opposite leaves, and solitary stipules between the petioles. Flowers solitary or in short racemes.

1. **R. aculeata,** L. Spiny; leaves small, obovate, smooth, coriaceous; flowers solitary, axillary; corolla (white) hairy in the throat, the tube 2 – 3 times as long as the calyx, the limb convolute in the bud. (R. latifolia, *Lam.*) — South Florida. — Branches rigid. Leaves 5″ – 10″ long, rather longer than the subulate spreading spines. Corolla 3″ – 4″ long. Fruit ovoid, as large as a pea, about 6-seeded. Sinuses of the calyx hairy.

2. **R.? clusiæfolia.** Spineless; leaves large, clustered at the end of the branches, obovate, smooth, mucronate; stipules large, ovate, persistent; racemes terminal, corymbose, shorter than the leaves; calyx-teeth subulate; corolla smooth within, fleshy, the tube many times longer than the calyx, the limb lanceolate, convolute in the bud. (Gardenia clusiæfolia, *Jacq.*?) — South Florida. — Leaves 3′ – 4′ long, 2′ wide, apparently somewhat fleshy, black when dry. Corolla 1′ long.

16. PINCKNEYA, Michx. Georgia Bark.

Calyx oblong-obovate, 5-lobed; the lobes lanceolate, deciduous, or one of them, in the outer flowers, often transformed into a large colored leaf. Corolla tubular, hairy, with 5 linear-oblong revolute lobes, slightly imbricated in the bud. Stamens 5, exserted: anthers oblong. Stigma obtuse. Capsule globose, papery, 2-celled, opening loculicidally at the apex, and at length septicidally to the base. Seeds numerous, in 2 rows, horizontal, membranaceous, winged. — A shrub or small tree, with pubescent branches. Leaves large, oval or oblong, acute, smoothish above, the lower surface, like the terminal compound cyme, hoary-pubescent. Stipules linear, deciduous.

1. **P. pubens,** Michx. — Marshy banks of streams in the pine barrens, Florida to South Carolina. May and June. — More conspicuous for its ovate pink-colored floral leaves, than for its purplish spotted corolla.

17. EXOSTEMMA, DC.

Calyx obovate or tubular; the limb 5-toothed, persistent. Corolla-tube very long, terete; the limb with 5 long linear recurved lobes, valvate in the bud.

Stamens 5, exserted. Style filiform, thickened above. Stigma obtuse or 2-lobed. Capsule coriaceous, ovoid, 2-celled, opening loculicidally at the apex, and septicidally nearly to the base, many-seeded. Seeds circular, imbricated, winged. — Trees or shrubs. Leaves opposite. Stipules solitary. Flowers white or reddish.

1. **E. Caribæum,** R. & S. Smooth; branches slender; leaves ovate-lanceolate, acuminate; peduncles axillary, solitary, 1-flowered; corolla as long as the leaves. — South Florida. — Shrub 6° – 12° high. Corolla 2′ long, fragrant.

18. OLDENLANDIA, Plum. Bluets.

Flowers tetramerous (except No. 8). Calyx 4-toothed, persistent. Corolla funnel-shaped, salver-shaped, or wheel-shaped, 4-lobed, imbricated in the bud. Stamens 4. Stigma mostly 2-lobed. Capsule roundish or obcordate, 2-celled, opening loculicidally at the apex, which is often free from the calyx. Seeds few or many, wingless. — Chiefly small herbs, with opposite leaves. Stipules united with the petioles, sometimes fringed with bristles. Flowers small, white or purplish.

* *Corolla salver-shaped, longer than the calyx, smooth: flowers dimorphous, — some of them bearing exserted stamens and an included style, while others bear included stamens and an exserted style: peduncles axillary, solitary: capsule broad, free at the apex.*

1. **O. cœrulea,** Gray. Annual or biennial, smooth; stems tufted, forking; leaves lanceolate, those at the base spatulate, clustered; peduncles elongated, erect or spreading. (Houstonia cœrulea, *L.* H. patens, *Ell.*) — Moist banks, Florida to Mississippi, and northward. February and March. — Stems 3′ – 6′ high. Corolla blue or white, yellow in the throat.

2. **O. serpyllifolia,** Gray. Perennial, smooth; stems filiform, prostrate, branching; leaves ovate or roundish, abruptly contracted into a long and slender petiole; peduncles elongated, terminal and in the forks of the stem. (Houstonia serpyllifolia, *Michx.*) — High mountains of North Carolina. — Stems 6′ – 12′ long. Peduncles 1′ – 2′ long.

3. **O. rotundifolia,** Gray. Perennial; stems diffuse, creeping; leaves round or oval, fleshy, abruptly contracted into a short petiole; peduncles mostly shorter than the leaves, recurved in fruit; flowers white. (Houstonia rotundifolia, *Michx.*) — Sandy soil near the coast, Florida to South Carolina, and westward. February and March, and bearing apetalous fruiting flowers through the year.

* * *Corolla funnel-shaped: flowers diœciously dimorphous: capsule free at the apex: stem 4-angled: flowers in terminal cymes.*

4. **O. purpurea,** Gray. Pubescent; stem branching, erect; leaves ovate or lanceolate-ovate, sessile, 3 – 5-ribbed; calyx-lobes longer than the capsule; corolla purple or nearly white, slightly hairy within; capsule roundish. (Houstonia purpurea, *L.*) — Woods, Mississippi to North Carolina, and northward. June and July. — Stems 8′ – 12′ high. Calyx-lobes occasionally 3 – 4 times the length of the capsule.

Var. **longifolia,** Gray. Smooth; leaves lanceolate or linear, 1-ribbed, the lowest spatulate-oblong; calyx-lobes as long as the globose capsule. (Houstonia longifolia, *Willd.*) — With the preceding.

Var. **tenuifolia,** Gray. Branches and pedicels filiform, spreading; leaves remote, narrow-linear; flowers and capsules smaller. (Houstonia tenuifolia, *Nutt.*) — Mountains of North Carolina. July.

5. **O. angustifolia,** Gray. Smooth; root woody; stems clustered, erect, branching above; leaves linear; cymes crowded, with the central flowers nearly sessile; corolla white, very hairy within; capsule ovoid, as long as the calyx-teeth. (Hedyotis stenophylla, *Torr. & Gray.*) — Sandy pine barrens, Florida, and westward. June and July. — Stems 1°–2° high.

Var. **filifolia.** Stem shrubby at the base, diffusely branched; leaves filiform, remote; cymes scattered, 3-flowered, the slender pedicels equal and spreading; capsule obcordate, rather longer than the calyx-teeth, the upper half free. — South Florida. — Stem slender, 6′–10′ long. Flowers and capsules very small.

* * * *Corolla wheel-shaped, shorter than the calyx-lobes: flowers axillary and terminal, single or clustered, sessile: stamens and style very short: capsule enclosed in the calyx-tube: perennial: stipules fringed.*

6. **O. Boscii.** Stems 4-angled, smooth, diffuse; leaves linear; flowers single, or 2–3 together; corolla white or purplish; capsule ovoid. (Hedyotis Boscii, *DC.*) — River-banks, Florida to South Carolina, and westward. July. — Stems 6′–10′ long.

7. **O. glomerata,** Michx. Stems terete, smooth or pubescent, branching; leaves oblong or oval, short-petioled; clusters dense, many-flowered; corolla greenish-white. (Hedyotis glomerata, *Ell.*) — Wet places, Florida to North Carolina, and westward. July. — Stems 10′–15′ high.

* * * * *Corolla funnel-shaped, 5-lobed, longer than the calyx-teeth: flowers axillary and terminal, pentamerous: capsule top-shaped, included in the calyx-tube: annual: stipules fringed.*

8. **O. Halei.** Stem weak, diffuse, forking; leaves oval-oblong, acute at each end, somewhat fleshy; flowers solitary, or in short 3–5-flowered cymes, white. (Hedyotis Halei, *Torr. & Gray.*) — Banks of rivers, South Florida, and westward. July.

19. SPIGELIA, L. Pinkroot.

Calyx 5-parted; the lobes linear-subulate, persistent. Corolla tubular-funnel-shaped, 5-lobed, valvate in the bud. Stamens 5: anthers linear. Style slender, jointed, hairy above. Stigma capitate. Capsule composed of two few-seeded carpels, which at length separate at the base and open loculicidally. — Herbs. Leaves opposite. Flowers in one-sided terminal spikes, rarely solitary.

1. **S. loganioides,** A. DC. Stem simple, ascending, somewhat 4-angled, the upper part and joints slightly puberulent; leaves ovate or obovate, sessile, the upper surface and margins roughish; flowers axillary, solitary, or the terminal ones three in a cluster; tube of the corolla more than twice as long as the

calyx-lobes. (Cœlostylis, *Torr. & Gray.*) — Near Fort King, East Florida. — Stem 6′ – 10′ high. Leaves 4″ – 9″ long. Corolla 4″ long, white.

2. **S. gentianoides,** Chapm. Stem erect, simple, 4-angled, roughish; leaves roundish, ovate, or oblong, sessile, acute, the upper surface and margins roughened; spikes terminal, few-flowered; lobes of the corolla connivent; stamens and style included. — Light dry soil, West Florida. May and June. — Stem 6′ – 10′ high. Corolla 6″ – 10″ long, pale rose-color.

3. **S. Marilandica,** L. Stem simple, erect, smooth, 4-angled; leaves ovate-lanceolate, or oblong, acute, sessile, pubescent on the veins; spikes terminal, many-flowered, sometimes forking; corolla long, slender, the lobes spreading; anthers and style exserted. — Rich woods, Florida to Mississippi, and northward. May and June. — Stem 1° – 2° high. Corolla 1½′ long, scarlet, yellow within. — A popular vermifuge.

20. MITREOLA, L. Mitre-wort.

Calyx 5-parted. Corolla short, 5-lobed, valvate in the bud, the tube roundish, bearded in the throat. Stamens 5, included: anthers ovate. Styles 2, short, united above. Stigma capitate. Capsule 2-parted, mitre-shaped, many-seeded, the two lobes opening on the inner face near the apex. Seeds oval, concave. — Smooth herbs, with opposite leaves, and small white flowers in terminal and axillary cymes, with the simple branches recurved in the bud.

1. **M. petiolata,** Torr. & Gray. Stem branching; leaves thin, oblong, acute, narrowed into a petiole. (Ophiorhiza lanceolata, *Ell.*) — Muddy banks, Florida to North Carolina, and westward. June – Sept. ① — Stem 4-angled, 1° – 2° high. Leaves 2′ – 3′ long.

2. **M. sessilifolia,** Torr. & Gray. Stem simple, 4-angled; leaves thick, ovate or roundish, strongly veined, sessile, rough on the margins; flowers and capsule very small. (Ophiorhiza Mitreola, *Michx.*) — Varies with lanceolate obscurely-veined leaves, and larger flowers and fruit. — Grassy swamps, Florida to North Carolina, and westward. July – Sept. ① — Stem 6′ – 18′ high. Leaves 6″ – 10″ long. Plant pale green.

21. POLYPREMUM, L.

Calyx deeply 4-parted, persistent. Corolla wheel-shaped, bearded in the throat, 4-lobed, imbricated in the bud. Stamens 4. Style single, very short. Stigma ovoid, entire. Capsule ovoid, compressed, 2-celled, loculicidally 2-valved, many-seeded. — A low smooth perennial herb, with 4-angled forking stems, linear acute leaves, their bases united by the membranaceous stipules, and solitary sessile white flowers in the forks of the stem.

1. **P. procumbens,** L. — Waste places, Florida to North Carolina. June – Sept. — Stems 6′ – 10′, erect or prostrate, clustered. Flowers very small, the corolla barely longer than the calyx-lobes.

22. GELSEMIUM, Juss. YELLOW JESSAMINE.

Flowers dimorphous. Calyx 5-parted, persistent. Corolla funnel-shaped, 5-lobed; the lobes rounded, emarginate, spreading, quincuncial in the bud, the sinuses impressed. Stamens 5, inserted near the base of the corolla: anthers oblong-sagittate, extrorse. Styles united, filiform, partly persistent. Stigmas 4, linear, spreading. Capsule oblong, compressed, 2-celled, opening septicidally to the middle, and loculicidally at the apex, each valve tipped with the persistent base of the styles. Seeds several, oval, flat, winged, obliquely imbricated in two rows. — A smooth woody vine, with opposite evergreen leaves, minute stipules, and large yellow fragrant flowers, in axillary bracted and cluster-like racemes.

1. **G. sempervirens,** Ait. — Margins of swamps, and river-banks, Florida to North Carolina, and westward. March and April. — Stem twining, purplish. Leaves lanceolate or ovate, acute or subcordate at the base, short-petioled. Racemes few-flowered. Pedicels scaly. Corolla $1' - 1\frac{1}{2}'$ long.

ORDER 71. VALERIANACEÆ. (VALERIAN FAMILY.)

Herbs with opposite exstipulate leaves, and cymose flowers. — Calyx-tube adherent to the ovary. Corolla tubular or funnel-shaped, mostly 5-lobed, imbricated in the bud. Stamens distinct, fewer than the corolla-lobes, and inserted into its tube. Ovary 3-celled, two of which are empty, the third containing a single suspended anatropous ovule. Style slender. Stigmas 1 – 3. Fruit 1 – 3-celled, 1-seeded. Albumen none.

1. VALERIANA, Tourn. VALERIAN.

Limb of the calyx composed of several plumose bristles, at first incurved, afterward spreading. Corolla gibbous at the base, 5-lobed. Stamens 3. Fruit 1-celled, 1-seeded. — Perennials.

1. **V. scandens,** L. Smooth; stem climbing; leaves on slender petioles, ternately divided; leaflets ovate, entire; cymes paniculate, diffuse, axillary and terminal; corolla very short. — East Florida.

2. **V. pauciflora,** Michx. Smooth; stem (1° – 3°) erect, or decumbent at the base, simple; leaves membranaceous, toothed or serrate, the radical ones mostly entire, ovate or cordate, long-petioled, the others pinnately 3 – 7-lobed; cymes terminal, in a close panicle; tube of the pale pink corolla long and slender. — Mountains of Tennessee, and northward. June and July.

2. FEDIA, Mœnch. LAMB-LETTUCE.

Calyx-limb toothed or obsolete. Corolla funnel-shaped, 5-lobed. Stamens 3. Fruit 3-celled, two of the cells empty and sometimes confluent into one, the other 1-seeded. — Annual herbs, with forking stems, opposite entire or lobed leaves, and white or purplish flowers in crowded bracted cymes.

1. **F. radiata,** Michx. Leaves oblong, the upper ones clasping and toothed at the base; fruit mostly downy, ovoid, with a furrow between the parallel and contiguous empty cells; flowers white. — River-banks, Florida, and northward. February and March. — Stem 6′ – 12′ high.

Order 72. COMPOSITÆ. (Composite Family.)

Flowers clustered in a dense head upon a common receptacle, and surrounded by an involucre. Calyx united with the ovary; the limb (*pappus*) either obsolete, or forming a cup-like or toothed border, or divided into chaffy scales or bristles. Corolla superior, flat or funnel-shaped, 5- (rarely 4-) lobed, valvate in the bud. Stamens alternate with the lobes of the corolla, and inserted into its tube: anthers cohering in a cylinder (*syngenesious*). Style single: stigmas 2. Fruit (achenium) dry and seed-like. Seed solitary, erect, without albumen. Radicle inferior. — Herbs or shrubs. Leaves without stipules. Involucre composed of short or leafy bracts (*scales of the involucre*), arranged in 1 – many series. Receptacle naked, or furnished with scales (*chaffy*). Heads with the flowers all tubular (*discoid*), or all strap-shaped, or the marginal ones strap-shaped or ligulate (*radiate*).

Artificial Synopsis of the Genera.

Suborder I. TUBULIFLORÆ. Corolla of the perfect flowers tubular, equally 5- (rarely 3 – 4-) lobed. Ray-flowers, when present, ligulate, either pistillate or neutral.

§ 1. Heads discoid.

* Heads with the flowers all perfect.

		No.
Pappus none. Leaves resinous-dotted. Flowers yellow.	FLAVERIA.	55
Pappus bristly or hairy.		
Flowers yellow.		
Receptacle pointed.	BIGELOVIA.	21
Receptacle flat.	Nos. 1 & 33 in SOLIDAGO.	20
Receptacle convex.	RUGELIA.	75
Flowers white, blue, or purple.		
Receptacle chaffy.		
Leaves opposite. Flowers white.	MELANTHERA.	40
Leaves alternate. Flowers purple.	CARPHEPHORUS.	8
Receptacle bristly.		
Leaves spiny.	CIRSIUM.	78
Leaves not spiny, cordate.	LAPPA.	79
Receptacle naked.		
Scales of the involucre in a single row.	CACALIA.	73
Scales of the involucre in 2 or more rows.		
Pappus double, the outer row very short.	VERNONIA.	1
Pappus single.		
Achenia ribbed or striate.		
Pappus plumose. Flowers cream-colored.	KUHNIA.	10
Pappus scabrous. Leaves cordate.	BRICKELLIA.	11
Pappus scabrous. Leaves not cordate.	LIATRIS.	9

Achenia not ribbed, 5-angled. No.
Receptacle conical. . . . . CONOCLINIUM. 14
Receptacle flat. Stems climbing. . . . . MIKANIA. 13
Receptacle flat. Stems erect. . . . . EUPATORIUM. 12
Pappus scaly.
Flowers blue or purple.
Pappus a cup-shaped border of united scales. . . . . CŒLESTINA. 5
Pappus slender, almost bristly.
Pappus deciduous. Heads large and single. . . . . STOKESIA. 2
Pappus persistent. Heads small, in 3-bracted clusters. . ELEPHANTOPUS. 3
Pappus of 5 oval almost bony scales. Leaves whorled. . . SCLEROLEPIS. 7
Flowers white.
Receptacle naked.
Leaves entire, linear or lanceolate. . . . . PALAFOXIA. 57
Leaves entire, ovate or cordate. . . . . AGERATUM. 6
Leaves pinnately lobed. . . . . HYMENOPAPPUS. 58
Receptacle chaffy.
Achenium top-shaped. Scales of the pappus 5–6. . . . MARSHALLIA. 63
Achenium flat. Pappus 2-awned. . . . . ACTINOMERIS. 49
Flowers yellow. Pappus 2–4-awned.
Awns of the pappus deciduous. . . . . HELIANTHUS. 47
Awns of the pappus persistent, hispid upward. . . . . COREOPSIS. 50
Awns of the pappus persistent, hispid downward. . . . . BIDENS. 52

* * Heads with flowers variously imperfect.

Marginal flowers pistillate. Central flowers perfect.
Pappus bristly.
Scales of the involucre in a single row. . . . . ERECHTHITES. 72
Scales of the involucre in 2 or more rows.
Involucre persistent. Leaves sinuate-lobed. . . . . CONYZA. 26
Involucre persistent. Leaves entire. Anthers tailed. . . . PLUCHEA. 28
Involucre persistent. Leaves entire. Anthers tailless. . . GNAPHALIUM. 70
Involucre deciduous. Heads spiked. . . . . PTEROCAULON. 29
Pappus not bristly, 5-lobed. . . . . TANACETUM. 67
Pappus none. . . . . ARTEMISIA. 68
Marginal flowers pistillate. Central flowers staminate.
Pappus none. Style rigid, persistent. . . . . SOLIVA. 69
Pappus none. Style deciduous. Heads nodding. . . . . IVA. 35
Marginal flowers neutral. Central flowers perfect. . . . . CENTAUREA. 77

* * * Heads dicœcious or monœcious.

Staminate and pistillate heads on the same plant.
Fruiting involucre 1-seeded, naked or tubercled. . . . . AMBROSIA. 36
Fruiting involucre 2-seeded, armed with hooked spines. . . . XANTHIUM. 37
Staminate and pistillate heads on separate plants.
Anthers tailed. Hoary herbs. . . . . ANTENNARIA. 71
Anthers tailless. Smooth shrubs. . . . . BACCHARIS. 27

§ 2. Heads radiate.

Rays pistillate.
Flowers all fertile.
Receptacle naked.
Rays yellow. Leaves opposite.
Pappus none. . . . . FLAVERIA. 55
Pappus scaly. . . . . PECTIS. 4
Rays yellow. Leaves alternate.
Scales of the involucre in 1 row. . . . . SENECIO. 74
Scales of the involucre in 2 rows. . . . . HELENIUM. 59
Scales of the involucre in several rows. . . . . INULA. 25

	No.
Rays white or purple.	
Pappus none. . . . . LEUCANTHEMUM.	66
Pappus bristly. . . . . ERIGERON.	17
Receptacle pitted.	
Rays white or purple.	
Pappus double. . . . . DIPLOPAPPUS.	18
Pappus single. Rays about 5. Achenia silky. . . . SERICOCARPUS.	15
Pappus single. Rays numerous. Pappus bristly. . . . . ASTER.	16
Pappus single. Rays numerous. Pappus scaly. . . . BOLTONIA.	19
Rays yellow.	
Pappus double, of the ray and disk flowers alike. . . . CHRYSOPSIS.	24
Pappus double, of the ray flowers none. . . . . HETEROTHECA.	23
Pappus single.	
Leaves opposite. Heads large, single or corymbose. . . . ARNICA.	76
Leaves alternate. Heads racemed or clustered. . . . SOLIDAGO.	20
Leaves alternate. Heads panicled. . . . . ISOPAPPUS.	22
Receptacle chaffy.	
Involucre double, the outer 4-leaved, 4-angled. . . . TETRAGONOTHECA.	43
Involucre imbricated or spreading.	
Maritime shrubs. Pappus 4-toothed. . . . . BORRICHIA.	39
Herbs.	
Receptacle conical or elongated.	
Rays persistent. Corolla-lobes velvety. . . . . ZINNIA.	41
Rays deciduous. Achenia 3–4-angled. . . . . HELIOPSIS.	42
Rays deciduous. Achenia compressed. . . . . SPILANTHES.	53
Receptacle flat.	
Leaves lobed, alternate. . . . . ACHILLEA.	65
Leaves not lobed. Pappus 2-awned. . . . . VERBESINA.	54
Leaves not lobed. Pappus none. . . . . ECLIPTA.	38
Flowers of the disk sterile.	
Rays yellow. Pappus none. . . . . POLYMNIA.	30
Rays yellow. Pappus a toothed crown. . . . . CHRYSOGONUM.	31
Rays yellow. Pappus 2-toothed or awned. Achenia winged. . . SILPHIUM.	32
Rays yellow. Pappus 2-toothed or awned. Achenia wingless. . BERLANDIERA.	33
Rays white. Receptacle conical. . . . . PARTHENIUM.	34
Rays neutral (without pistils).	
Receptacle naked, or nearly so.	
Achenia villous. Pappus scaly, long-awned. . . . . GAILLARDIA.	56
Achenia smooth or the angles hairy. Pappus awnless. . . . LEPTOPODA.	60
Receptacle deeply pitted.	
Margins of the pits entire. Perennial. . . . . BALDWINIA.	61
Margins of the pits toothed. Annual. . . . . ACTINOSPERMUM.	62
Receptacle chaffy throughout.	
Involucre double. Pappus 2–4-awned.	
Awns of the pappus hispid upward. . . . . COREOPSIS.	50
Awns of the pappus hispid downward. Achenia beakless. . . BIDENS.	52
Awns of the pappus hispid downward. Achenia beaked. . . . COSMOS.	51
Involucre simple or imbricate.	
Pappus a cup-shaped border, or none.	
Chaff of the receptacle elongated, spine-pointed. . . . ECHINACEA.	44
Chaff of the receptacle not elongated nor spine-pointed. . . RUDBECKIA.	45
Pappus 2–4-awned.	
Achenia winged. Leaves divided. Receptacle elongated. . . LEPACHYS.	46
Achenia winged. Leaves undivided. Receptacle convex. . ACTINOMERIS.	49
Achenia wingless. Awns of the pappus deciduous. . . HELIANTHUS.	47
Achenia wingless. Awns of the pappus persistent. . . HELIANTHELLA.	48
Receptacle chaffy at the apex. Achenia ribbed. . . . . MARUTA.	64

SUBORDER II. LABIATIFLORÆ. Corolla of the perfect flowers 2-lipped; the outer lip 3-lobed, the inner 2-lobed.

	No.
Herb stemless. Scape 1-flowered. Flower nodding. . . . CHAPTALIA.	80

SUBORDER III. LIGULIFLORÆ. Corolla of all the flowers ligulate.

Pappus none. Achenia many-ribbed. . . . . APOGON.	81
Pappus scaly and bristly.	
Scales of the pappus 5, with 5 intermediate bristles. . . . . KRIGIA.	82
Scales of the pappus and bristles numerous. . . . . CYNTHIA.	83
Pappus hairy.	
Pappus tawny or dirty-white.	
Flowers erect, rose-color. Leaves filiform. . . . . LYGODESMIA.	86
Flowers erect, yellow. Achenia beakless. . . . . HIERACIUM.	84
Flowers erect, yellow. Achenia long-beaked. . . . . PYRRHOPAPPUS.	88
Flowers nodding, whitish or purplish. . . . . NABALUS.	85
Pappus clear white (except in one Mulgedium).	
Achenia conspicuously beaked.	
Achenia ribbed. Stemless herbs. . . . . TARAXACUM.	87
Achenia flat. Stems leafy. . . . . LACTUCA.	89
Achenia beakless or nearly so.	
Flowers blue. Achenia slightly beaked. . . . . MULGEDIUM.	90
Flowers yellow. Achenia beakless. . . . . SONCHUS.	91

SUBORDER I. TUBULIFLORÆ.

TRIBE I. VERNONIACEÆ. *Heads discoid; the flowers all tubular and perfect: branches of the style terete, filiform, hairy all over; the stigmatic lines only on the lower part. — Herbs, with alternate leaves and purple flowers.* PECTIS *alone has pistillate rays and yellow flowers.*

1. VERNONIA, Schreb. IRON-WEED.

Heads many-flowered, the flowers all equal and tubular. Involucre shorter than the flowers; the scales closely imbricated in several rows. Receptacle naked. Achenia cylindrical, ribbed. Pappus double; the exterior consisting of very short scale-like bristles, the interior of copious capillary bristles. — Perennial herbs, with alternate leaves, and corymbose purple flowers.

1. **V. oligophylla,** Michx. Stem nearly naked; leaves rough above, pubescent beneath, denticulate; those at the base large, oval or oblong, the others small, distant, lanceolate; corymb few-flowered, spreading; involucre bell-shaped, the scales lanceolate, acuminate, fringed. — Damp soil, Georgia to North Carolina, and westward. July. — Stem 2° high, sparingly branched.

2. **V. ovalifolia,** Torr. & Gray. Stem pubescent, very leafy, corymbose-branched above; leaves roughish above, pubescent beneath; the lowest ones oval or oblong, toothed-serrate; the upper lanceolate and entire; involucre bell-

shaped; scales ovate, acute, fringed. — Dry rich woods, Middle Florida. June and July. — Stem 2° - 3° high.

3. **V. Noveboracensis,** Willd. Stem more or less pubescent, branched above; leaves lanceolate, serrate, mostly roughish above, smooth or pubescent beneath; corymbs spreading; involucre hemispherical, the scales fringed, ovate, ending in a long filiform point, or simply acute. (V. tomentosa, *Ell.* V. præalta, *Willd.*) — River-banks and low ground, Florida to Mississippi, and northward. July - Sept. — Stem 3° - 6° high. Scales of the involucre purple, and usually covered with web-like hairs.

4. **V. fasciculata,** Michx., var. **altissima,** Torr. & Gray. Stem tall, and, like the lanceolate serrate leaves, smoothish; involucre small, hemispherical; the scales ovate, acute or mucronate, fringed, appressed. (V. altissima, *Nutt.*) — Low ground, Florida to North Carolina, and westward. September. — Stem 6° - 10° high. Leaves 6′ - 12′ long.

5. **V. angustifolia,** Michx. Stem slender, smooth or hairy, very leafy; leaves linear or linear-lanceolate, smoothish, or pubescent and roughish, the lowest ones sparingly denticulate, the upper entire, with the margins revolute; corymbs mostly umbel-like; involucre bell-shaped; the scales lanceolate, fringed, acute or conspicuously mucronate. (V. scaberrima, *Nutt.*) — Dry pine barrens, Florida to North Carolina, and westward. June - August. — Stem 2° - 3° high.

2. STOKESIA, L'Her.

Heads many-flowered; the marginal flowers much larger, deeply split on the inside, and ray-like. Involucre subglobose, bracted, the outer scales prolonged into a leafy bristly-fringed appendage, the inner ones lanceolate and entire. Receptacle naked. Achenia short, 3 - 4-angled, smooth. Pappus composed of 4 - 5 filiform chaffy deciduous scales. — A sparingly branched downy-stemmed perennial. Leaves smooth, lanceolate, entire, the upper ones sessile, and, like the bracts, fringed at the base, the lowest narrowed into a slender petiole. Heads few or solitary, large, terminal. Flowers blue.

1. **S. cyanea,** L'Her. — Wet pine barrens, South Carolina, and westward, very rare. — Stems 1° - 1½° high. Heads 1′ wide.

3. ELEPHANTOPUS, L. Elephant's-foot.

Heads 3 - 5-flowered, crowded in terminal 3-bracted clusters. Flowers all equal and similar. Involucre compressed; scales 8, in 2 rows, dry, oblong, acute, dotted. Receptacle naked. Corolla deeply split on one side, palmate. Achenium oblong, ribbed, hairy. Pappus bristly from a dilated base, double or single. — Erect hairy corymbose-branched perennials, with alternate ample leaves, and purple or white flowers.

1. **E. Carolinianus,** Willd. Stem leafy, hairy; leaves thin, oval or oblong, incurved-serrate, hairy, tapering into a petiole; bracts ovate, longer

than the heads; scales of the involucre slightly hairy. — Damp shady soil, Florida to Mississippi, and northward. July and August. — Stem 1° – 2° high. Leaves 3′ – 6′ long, 2′ – 4′ wide. Flowers purple.

2. **E. tomentosus,** L. Rough-hairy; stem nearly naked; radical leaves spreading, obovate-oblong, narrowed into a petiole; stem-leaves (1 – 2) small, lanceolate; bracts ovate or cordate, usually shorter than the heads; scales of the involucre very hairy. (E. nudicaulis, *Ell.*) — Dry sandy soil, Florida to North Carolina, and westward. June – August. — Stem 1° – 2° high. Radical leaves 4′ – 10′ long, 2′ wide, spreading on the ground. Flowers pale purple.

4. PECTIS, L.

Heads several-flowered, radiate. Rays pistillate. Disk-flowers somewhat 2-lipped, perfect. Involucre cylindrical. Scales 5 – 8, in a single row. Receptacle naked. Branches of the style short, obtuse. Achenium linear. Pappus composed of about five unequal bristle-pointed scales. — Chiefly annuals. Leaves opposite, glandular-dotted, bristly on the margins. Flowers small, yellow.

1. **P. linifolia,** L. Stem diffusely branched (6′ – 12′ high); leaves linear, connate; heads small, on long and slender bracted peduncles; scales of the involucre slightly produced at the base; achenia hairy. — South Florida.

Tribe II. EUPATORIACEÆ. *Heads discoid; the flowers all tubular and perfect: branches of the style, usually elongated, club-shaped, minutely pubescent; the stigmatic lines obscure. — Flowers white, blue, or purple.*

5. CŒLESTINA, Cass.

Heads many-flowered. Involucre nearly hemispherical; the scales numerous, imbricated. Receptacle naked or chaffy. Achenia 5-angled. Pappus cup-shaped, truncate or more or less prominently toothed. — Leaves opposite, toothed. Heads in close corymbs. Flowers blue or purple.

1. **C. maritima,** Torr. & Gray. Stem diffuse, somewhat shrubby at the base, smooth; leaves ovate, abruptly contracted into a slender petiole; corymbs few-flowered; receptacle naked; pappus a whitish truncated margin. — South Florida. — Stem 1° – 2° long. Flowers blue.

6. AGERATUM, L.

Receptacle always naked. Pappus composed of 5 – 10 distinct scales. Otherwise like Cœlestina.

1. **A. conyzoides,** L. Leaves ovate, rhombic, or cordate, on rather long petioles; scales of the pappus 5, slightly serrate, awn-pointed from a broad base. — Wet places near Savannah, Georgia. May. — Pubescence and form of the leaves variable. Flowers white or blue.

7. SCLEROLEPIS, Cass.

Heads many-flowered. Scales of the involucre linear, imbricated in two rows, equal. Receptacle naked. Corolla 5-toothed. Achenia 5-angled. Scales of the pappus 5, almost horny, oval. — A smooth aquatic perennial herb, with whorled linear leaves, and 1–3 heads of purple flowers, terminating the stem or peduncle-like branches.

1. **S. verticillata,** Cass. (Sparganophorus verticillatus, *Michx.*) — Shallow ponds, Florida to Mississippi, and northward. July. — Stems ascending, 1° high. Leaves 5–6 in a whorl. Heads $\frac{1}{2}'$ wide.

8. CARPHEPHORUS, Cass. (LIATRIS, *Ell.*)

Heads many-flowered. Scales of the involucre imbricated in 3–5 rows, ovate or lanceolate, appressed. Receptacle chaffy. Achenia 10-ribbed. Pappus of numerous unequal bearded bristles. — Erect perennial herbs. Leaves alternate. Heads corymbed. Flowers purple.

1. **C. Pseudo-Liatris,** Cass. Pubescent and somewhat hoary; stem simple, rigid; leaves linear, appressed, the lowest crowded, elongated; corymb small, dense, mostly simple; pedicels bracted; scales of the involucre lanceolate, acute, hairy. — Open grassy pine barrens, West Florida. September. — Stem 6′–18′ high. Heads rarely racemose.

2. **C. tomentosus,** Torr. & Gray. Stem simple, tomentose; leaves smooth or hairy, gland-pointed; the lowest oblong or lanceolate, 3-ribbed, narrowed into a long clasping petiole, the others numerous, small, oblong or oval, sessile; corymb loose-flowered; scales of the involucre very tomentose, the outer ones short, ovate, the inner oblong, acute. (L. Walteri, *Ell.*) — Low pine barrens, North and South Carolina. September. — Stem 2° high.

3. **C. corymbosus,** Torr. & Gray. Stem tall, hairy; leaves smooth or more or less hairy; the lowest cuneate-lanceolate, obtuse, 1- or obscurely 3-ribbed; the others numerous, small, oblong, sessile; heads about 20, closely corymbed; scales of the involucre nearly smooth and equal, oval, very obtuse, broadly margined. (L. tomentosa, *Ell.*) — Margins of swamps, Florida to North Carolina. September. — Stem 2°–4° high.

4. **C. bellidifolius,** Torr. & Gray. Smooth; leaves spatulate-lanceolate, 3-ribbed, obtuse; heads few in a loose corymb; scales of the involucre oblong, obtuse, sparingly fringed on the margins; pappus slightly plumose. — Dry sand-hills, Wilmington, North Carolina. September. — Stems several from the same root, 12′–18′ high. Heads sometimes panicled.

9. LIATRIS, Schreb. BUTTON-SNAKEROOT.

Heads few- or many-flowered, the flowers all similar and perfect. Scales of the involucre imbricated. Receptacle naked. Corolla 5-lobed. Achenia nearly terete, narrowed at the base, about 10-ribbed. Pappus of numerous plumose or bearded bristles. — Perennial herbs (rarely shrubby), with mostly tuberous roots

and simple stems. Leaves alternate, usually entire. Flowers purple, often varying into white, commonly dotted with resinous particles.

§ 1. *Root tuberous: leaves very numerous, linear or lanceolate, the lowest broader and tapering at the base, the upper sessile: heads in spikes or racemes: achenia hairy: pappus plumose or bearded: stems simple, or in more vigorous plants sometimes branching below the spikes, and bearing fewer-flowered heads.*

* *Scales of the involucre with petal-like or leafy tips: pappus plumose.*

1. **L. elegans,** Willd. Heads very numerous in a cylindrical raceme, 4–5-flowered; inner scales of the involucre petal-like, purple; stem tomentose; leaves smooth, the lowest lanceolate.— Dry pine barrens, Florida to South Carolina, and westward. August. — Stem 2° high. Heads showy.

2. **L. squarrosa,** Willd. Heads few or numerous, large, many-flowered, cylindrical; scales of the involucre with leafy spreading tips; stem pubescent; leaves smoothish or hairy, long, linear, rigid, 3–5-ribbed. — Dry sandy soil, Florida to Mississippi, and northward. July and August. — Stem 1°–1½° high. Heads 1′ long, sessile or terminating short branchlets. Corolla-lobes hairy.

* * *Scales of the involucre not appendaged.*

+ *Heads 3–6-flowered: pappus conspicuously plumose.*

3. **L. Boykinii,** Torr. & Gray. Nearly smooth; stem slender; leaves linear, dotted; heads 3–4-flowered, rather closely spiked; scales of the involucre smooth, lanceolate or linear, acuminate and spreading at the apex, as long as the pappus. — Near Columbus, Georgia. August and September. — Stem 1°–2° high. Spike 6′–10′ long.

4. **L. tenuifolia,** Nutt. Smooth; stem tall and slender; leaves narrow-linear or filiform, the lowest long and crowded; heads 5-flowered, in a long and close raceme; scales of the involucre barely pointed, smooth, purple. — Dry pine barrens, Florida to North Carolina, and westward. September. — Stem 2°–4° high. Racemes often 1-sided.

+ + *Heads 3–many-flowered: pappus densely bearded.*

5. **L. pauciflora,** Pursh. Stem pubescent, declining; leaves linear, short, smooth; heads 4–5-flowered, in a long 1-sided raceme; scales of the involucre oblong-lanceolate, acute, smooth, or pubescent on the margins. (L. secunda, *Ell.*) — Dry sandy ridges in the middle districts. Alabama to North Carolina. September. — Stem 2°–3° long.

6. **L. Chapmanii,** Torr. & Gray. Stem tomentose; leaves smooth or pubescent, linear, rather obtuse; the uppermost very short and bract-like; heads mostly 3-flowered, cylindrical, densely spiked; scales of the involucre lanceolate, acuminate, smooth; the outer ones much shorter and broader; corolla and very hairy achenium large. — Dry sandy ridges, Florida. July–Sept. Stem 1°–2° high.

7. **L. gracilis,** Pursh. Stem tomentose and somewhat hoary; leaves smooth or nearly so, the lowest lanceolate, obtuse, long-petioled, the others linear, appressed or spreading, short; heads small, 3–7-flowered, sessile or on slender tomentose and bracted pedicels; scales of the involucre oblong, rather

obtuse or mucronate, more or less pubescent; the edges not margined and commonly ciliate. — Sandy pine barrens, Alabama, Georgia, and Florida. September. — Stem 1° – 2° high. Varies greatly in the length and direction of the pedicels.

8. **L. graminifolia,** Willd. Stem usually smooth, and striped with greener lines; leaves more or less hairy on the upper surface, and fringed near the base; the lowest lanceolate or linear-lanceolate, elongated, the upper linear; heads in spikes or racemes, often very numerous; involucre broadly obconical, 7 – 14-flowered; the scales oblong-spatulate, rounded at the apex, narrowly margined. (L. gracilis, *Ell.*, a more slender form, with the fewer-flowered heads on longer pedicels.) — Light dry soil, Florida to Mississippi, and northward. September. — Stem 2° – 6° high.

9. **L. spicata,** Willd. Smooth; stem very leafy; leaves linear, erect; the lowest very long, obtuse, 3 – 5-ribbed; the uppermost small and bract-like; heads sessile, cylindrical, 8 – 12-flowered, crowded in a long cylindrical spike; scales of the involucre smooth, obtuse, narrow-margined, purple. (L. resinosa, *Nutt.*, a small form with 5-flowered heads.) — Swamps, Florida to Mississippi, and northward. August and September. — Stem rigid, 2° – 5° high. Spikes sometimes 2° – 3° long. Styles elongated.

10. **L. pilosa,** Willd. More or less pubescent with long scattered hairs; stem stout; leaves linear or linear-lanceolate, elongated, hairy; heads in a loose simple raceme, 10 – 15-flowered; scales of the turbinate or campanulate involucre glabrous, not punctate, with slight scarious margins, the exterior narrowly oblong, short, very obtuse; the innermost linear; achenia pubescent, nearly as long as the densely bearded (almost plumose) pappus. — Henderson County, North Carolina, *Curtis.* — A stout plant, with the heads 8″ – 10″ long.

11. **L. scariosa,** Willd. Stem stout, pubescent; leaves mostly pubescent, the lowest large, oblong or lanceolate, obtuse, the upper linear, acute; heads large, 15 – 40-flowered, roundish, sessile or pedicelled; scales of the involucre spatulate or obovate, rounded at the apex, usually with broad and colored margins; the outer ones with spreading tips. (L. spheroidea, *Michx.*) — Dry light soil, Florida to Mississippi, and northward. September. — Stem 3° – 6° high. Heads sometimes 1′ wide.

12. **L. heterophylla,** Brown. Leaves lanceolate, smooth; the upper ones linear-lanceolate and much smaller; heads about 10, roundish, spiked, crowded, 15 – 16-flowered; scales lanceolate, with pointed spreading tips. — Georgia to North Carolina, not common.

§ 2. *Root not tuberous: leaves obovate or oblong: heads few-flowered, corymbed or panicled: pappus minutely bearded.*

13. **L. odoratissima,** Willd. (Hound's Tongue.) Stem herbaceous, smooth; leaves smooth and often glaucous, obtuse; the lowest spatulate-obovate, 3 – 5-ribbed, the upper oval or oblong, small, sessile; heads 7 – 8-flowered, disposed in an ample spreading corymb or panicle. — Flat pine barrens, Florida to North Carolina, and westward. September. — Stem 2° – 3° high. The withering leaves exhale the odor of vanilla.

14. **L. paniculata,** Willd. Stem viscid-pubescent; leaves smooth; the lowest spatulate-lanceolate, the upper lanceolate, sessile, small; heads mostly 5-flowered, in small lateral and terminal corymbs, forming a dense oblong panicle. — Damp pine barrens, Florida to North Carolina, and westward. Sept. and Oct. — Stem 1° – 2° high.

15. **L. fruticosa,** Nutt. Stem shrubby, smooth; branches naked above; leaves obovate, not ribbed, the lowest ones opposite; heads corymbose, 5-flowered; scales of the involucre lanceolate, acute, dotted. — East Florida. — Leaves 1′ long.

10. KUHNIA, L.

Heads 10 – 25-flowered. Flowers all similar and perfect. Scales of the involucre few and loosely imbricated in 2 – 3 rows. Receptacle naked. Corolla slender, 5-toothed. Achenium cylindrical, many-striate. Pappus a single row of strongly plumose bristles. — A perennial herb, with lanceolate or linear dotted leaves, and heads of yellowish-white flowers in panicled corymbs.

1. **K. eupatorioides,** L. Stem pubescent, or somewhat viscid, mostly branched; leaves toothed or entire, pubescent, or smoothish beneath, the lower ones sometimes opposite; corymbs loose or crowded. (K. Critonia, and K. glutinosa, *Ell.*) — Light and dry soil, Florida to Mississippi, and northward. Sept. — Stem 2° – 4° high.

11. BRICKELLIA, Ell.

Heads few- or many-flowered. Scales of the involucre linear, imbricated, the outer ones shorter. Receptacle flat, naked. Corolla 5-toothed. Achenia cylindrical, 10-striate. Pappus a single row of bearded bristles. — Perennial herbs, with dotted opposite 3-ribbed leaves, and large heads of pale purple flowers, in terminal corymbs.

1. **B. cordifolia,** Ell. Stem erect, tomentose, mostly branching; leaves ovate, serrate, mostly cordate, petioled, the upper ones often alternate; heads large, 30 – 40-flowered; achenia nearly smooth. — Light rich soil, Western Georgia and Florida, and westward. Aug. — Stem 2° – 4° high. Flowers showy.

12. EUPATORIUM, Tourn. Thoroughwort.

Heads 3 – many-flowered. Involucre cylindrical or bell-shaped, the scales in a single row, or imbricated in 2 – several rows. Receptacle flat, naked. Corolla 5-toothed. Achenia 5-angled, the sides smooth and even. Pappus a single row of slender rough bristles. — Perennial and mostly resinous-dotted herbs, with opposite or whorled leaves, and white or purplish flowers.

§ 1. *Heads corymbed.*

* *Scales of the cylindrical involucre numerous, closely imbricated in several rows, the outer ones shorter: heads few- or many-flowered: leaves chiefly opposite.*

1. **E. ivæfolium,** L. Herbaceous; stem (3° – 5°) erect, terete, rough-hairy, at length much branched; leaves lanceolate, acute at each end, nearly

sessile, 3-nerved, sparingly serrate; corymbs dense; heads 15–20-flowered; scales of the involucre very obtuse, strongly striate. — Near Natchez, Mississippi, and South Florida. July–November. — Flowers blue.

* * *Scales of the involucre purplish, scarious, obtuse, imbricated in several rows, the outer ones much shorter: leaves whorled: flowers purplish.*

2. **E. purpureum,** L. Smooth or pubescent; stem simple, tall, often spotted or dotted; leaves petioled, 3–6 in a whorl, varying from lanceolate to ovate, coarsely serrate, roughish; corymbs large, compound; heads 5–10-flowered. — Swamps, rarely in dry woods, Florida to Mississippi, and northward. Aug.–Sept. — Stem 3°–10° high, solid or hollow, even or grooved. A variable species, including E. ternifolium, E. maculatum, and E. verticillatum, *Ell.*

* * * *Scales of the involucre (green or white) imbricated in 2–3 rows, the outer ones shorter: heads 5–20-flowered: leaves, achenia, &c. dotted with resinous glands: flowers white.*

+– *Heads 5-flowered: leaves undivided, sessile or narrowed into a stalk-like base (except No. 12.)*

3. **E. hyssopifolium,** L. Pubescent; leaves opposite, the upper ones alternate, lanceolate or ovate-lanceolate, coarsely serrate or toothed, 3-ribbed at the base; scales of the involucre lanceolate, obtuse, mucronate, shorter than the flowers. (E. linearifolium, *Walt.*) — Varies with the leaves narrow-linear and entire, the lower ones 4 in a whorl, and numerous smaller ones in the axils. — Low ground, Florida to Mississippi, and northward. Sept. — Stem 2°–3° high. Leaves rigid, sometimes all alternate.

4. **E. cuneifolium,** Willd. Pubescent; leaves short, obovate-oblong, sparingly serrate near the summit, or entire, 3-ribbed, mostly very obtuse; scales of the involucre obtuse, shorter than the flowers. (E. glaucescens, *Ell.*) — Rich shaded soil, Florida to South Carolina. Sept. — Stem 2°–3° high. Leaves 1′ long, pale and somewhat glaucous on both sides.

5. **E. leucolepis,** Torr. & Gray. Stem simple, virgate, minutely pubescent and roughened; leaves somewhat remote, lanceolate or linear-lanceolate, acute, serrate, very rough on both sides, obscurely 3-ribbed; corymbs ample, hoary; scales of the involucre lanceolate, acuminate, white and scarious at the apex, as long as the flowers. — Flat pine barrens, Florida and northward. Sept. — Stem 2° high. Leaves 1′–2′ long.

6. **E. parviflorum,** Ell. Tomentose; stem slender, simple or branched above; leaves alternate, opposite, or whorled, lanceolate, acute, strongly serrate, 3-ribbed near the base, tapering into a petiole; corymbs large; scales of the involucre lanceolate, obtuse, shorter than the flowers, scarcely longer than the mature achenia. — Margins of ponds and wet places, Florida to North Carolina, and westward. Sept. — Stem 2° high. Leaves 2′ long, strongly veined. Flowers smallest of all.

7. **E. scabridum,** Ell.? Stem stout, tomentose; leaves opposite, ovate-lanceolate, acute at both ends, thickly and unequally serrate, rough above, tomentose and somewhat glaucous beneath, 3-ribbed from near the base; corymbs

ample, dense; scales of the involucre lanceolate, cuspidate, shorter than the flowers. — Low pine barrens, Middle Florida to South Carolina. August. — Stem 2° high. Leaves 1½′ long.

8. **E. rotundifolium,** L. Stem pubescent, mostly simple; leaves short, broadly ovate or roundish, obtusely serrate, roughish, mostly truncate at the base, 3-ribbed and somewhat rugose; corymbs large; scales of the involucre lanceolate, acute, shorter than the flowers. — Low pine barrens, Florida to North Carolina, and westward. August. — Stem 2° high. Leaves 1′ long.

9. **E. teucrifolium,** Willd. Rough-pubescent; leaves ovate or oblong-ovate, coarsely serrate and sometimes toothed near the base, 3-ribbed; the upper ones small and remote; corymbs dense, depressed in the centre; scales of the involucre lanceolate, mucronate, shorter than the flowers. (E. verbenæfolium, *Michx.*) — Damp soil, Florida and northward. Sept. — Stem virgate, 2° – 3° high. Leaves 1′ – 1½′ long, the base rounded or truncate. Branches of the corymb alternate.

10. **E. album,** L. Rough-pubescent or hairy; leaves oblong or lanceolate, narrowed at the base, toothed-serrate, strongly veined; corymbs dense; scales of the involucre lanceolate, smooth, or the outer ones pubescent, longer than the flowers, the acuminate or mucronate tips white and scarious. — Dry sandy soil, Florida to Mississippi, and northward. Sept. — Stem 1° – 2° high. Leaves 2′ long.

11. **E. altissimum,** L. Stem tomentose; leaves opposite, lanceolate, acute, pubescent, strongly 3-ribbed, sharply serrate above the middle, narrowed at the base; corymb dense, hoary; scales of the involucre shorter than the flowers, linear-oblong, obtuse. — Sterile soil, North Carolina and westward. Sept. — Stem 3° – 7° high. Leaves 3′ – 4′ long.

12. **E. sessilifolium,** L. Smooth; leaves long, lanceolate, acuminate, serrate, rounded and closely sessile at the base; corymb tomentose; scales of the involucre oblong, obtuse. (E. truncatum, *Ell.*) — Open woods, in the upper districts, Alabama and northward. Sept. — Stem 2° – 4° high, mostly branching above. Leaves 3′ – 6′ long, thin and veiny.

13. **E. mikanioides,** n. sp. Stem ascending from a creeping base, branching and tomentose above; leaves opposite, long-petioled, deltoid, glandular-serrate or toothed, truncate or abruptly acute at the base, resinous-dotted above, pubescent on the veins beneath; the petioles somewhat connate; corymb ample; scales of the involucre about 10, lanceolate, acute; anthers slightly exserted; achenia 5-angled, glandular. — Low sandy places, on St. Vincent's Island, West Florida. Sept. — Stem 1° – 2° high. Leaves 1′ – 1½′ long, somewhat fleshy.

+– +– *Heads 6 – 15-flowered: leaves opposite.*

++ *Leaves sessile or perfoliate.*

14. **E. pinnatifidum,** Ell. Pubescent; leaves lanceolate, pinnately lobed or pinnatifid, the uppermost linear and entire, the lowest ones whorled; heads 6 – 9-flowered; scales of the involucre lanceolate, acute. — Dry soil, Florida to North Carolina. Sept. — Stem 2° – 3° high.

15. **E. perfoliatum,** L. Pubescent or hairy; leaves lanceolate, acuminate, crenate-serrate, rugose, sessile and clasping at the base, or connate-perfoliate; heads about 10-flowered; scales of the involucre linear-lanceolate, acute. — Low ground, Florida and northward. Sept. — Stem stout, 2° – 3° high. Leaves 6′ – 8′ long.

** ** *Leaves petioled.*

16. **E. serotinum,** Michx. Pubescent; stem tall, mostly branching; leaves long-petioled, ovate-lanceolate, acuminate, sharply serrate, 3-ribbed; heads 12 – 15-flowered; scales of the involucre linear-oblong, obtuse; achenia smooth. — Rich soil, Florida to North Carolina, and westward. Sept. — Stem 3° – 6° high. Leaves 4′ – 9′ long.

17. **E. villosum,** Swartz. Stem tomentose, branching; leaves short-petioled, ovate, obtuse or mucronate, rusty-pubescent, denticulate or entire, 3-ribbed; corymb dense; heads 10 – 15-flowered; scales of the involucre about 10, equal, linear, obtuse, shorter than the flowers; anthers slightly exserted; achenia hispid; pappus shorter than the flowers. — South Florida. — Leaves rigid, 1′ – 1½′ long.

* * * * *Scales of the involucre (green) equal, in a single row: heads* 8 – 30*-flowered: leaves, achenia, &c. not resinous-dotted: leaves on slender petioles.*

18. **E. ageratoides,** L. Smooth; leaves thin, ovate or slightly cordate, acuminate, coarsely and sharply serrate, 3-ribbed; heads 10 – 20-flowered; scales of the involucre linear, acutish, slightly pubescent; achenia smooth. — Rich shaded soil, Florida to Mississippi, and northward. Sept. — Stem commonly branching, 2° – 3° high. Leaves 3′ – 5′ long. Flowers white.

19. **E. aromaticum,** L. Pubescent; leaves thickish, ovate, or the lowest cordate, crenate-serrate, roughish, on short petioles, barely acute; heads 8 – 15-flowered; scales of the involucre linear; achenia smooth. (E. ceanothifolium, *Willd.*) — Dry open woods, common. Sept. — Stem 2° high. Leaves 1′ – 2′ long. Flowers white.

20. **E. incarnatum,** Walt. Pubescent; stem slender, reclining, diffusely branched; leaves on long petioles, deltoid, acuminate, truncate or cordate at the base, coarsely serrate; corymbs numerous, small; heads about 20-flowered; scales of the involucre linear, acute, 2-ribbed; achenia hispid. — Rich shaded soil, Florida to North Carolina. Sept. — Stem 2° – 4° long. Leaves 1′ – 2′ long. Flowers pale purple.

§ 2. *Heads in panicled racemes: leaves pinnately divided.*

21. **E. fœniculaceum,** Willd. Stem tall, pubescent, paniculately much branched; divisions of the leaves filiform, smooth; heads 3 – 5-flowered; scales of the involucre smooth, margined, notched at the apex, mucronate; achenia smooth. — Chiefly in old fields, Florida to North Carolina, and westward. Sept. and Oct. — Stem 3° – 8° high. Flowers white.

22. **E. coronopifolium,** Willd. Pubescent; stem paniculately branched; divisions of the leaves linear; heads crowded, 5-flowered; scales of the involucre mucronate, pubescent, margined; achenia smooth. — Dry sandy soil, Florida to North Carolina. Sept. and Oct. — Stem 2° – 4° high. Flowers white. — Probably a broader-leaved form of the preceding.

13. MIKANIA, Willd.

Heads 4-flowered. Scales of the involucre 4. Receptacle naked, flat. Anthers partly exserted. Corolla, achenia, &c. as in Eupatorium. — Chiefly climbing herbs, with opposite mostly cordate leaves, and whitish flowers.

1. **M. scandens,** Willd. Smooth or pubescent; leaves on slender petioles, acuminate, toothed or entire; corymbs numerous, on short axillary branches or peduncles; scales of the involucre linear, acute; achenia minutely glandular. (M. pubescens, *Muhl.*) — Swamps, Florida and northward. Aug. and Sept. — Stem twining.

14. CONOCLINIUM, DC.

Heads many-flowered. Scales of the involucre nearly equal, imbricated in 2–3 rows. Receptacle conical, naked. Corolla 5-toothed. Anthers included. Achenia angled, smooth. — Perennial herbs, with opposite petioled serrate leaves, and heads of purple or blue flowers in a terminal corymb.

1. **C. cœlestinum,** DC. Smoothish; leaves deltoid-ovate, the lowest often cordate, acuminate, coarsely serrate; heads 30–60-flowered; flowers bluish-purple. (Eupatorium cœlestinum, *L.*) — Rich soil, Florida and northward. Sept. — Stem 2° high.

Tribe III. ASTEROIDEÆ. *Heads discoid or radiate; the rays pistillate: branches of the style, in the perfect flower, flattened, linear or lanceolate, equally pubescent above on the outside; the conspicuous stigmatic lines terminating where the exterior pubescence commences.*

15. SERICOCARPUS, Nees.

Heads 12–15-flowered; the ray-flowers about 5, white, pistillate; those of the disk tubular and perfect. Involucre somewhat cylindrical or club-shaped; the scales cartilaginous, whitish, closely imbricated in several rows, with greenish and more or less spreading tips. Receptacle pitted, toothed. Achenia short, obpyramidal, silky. Pappus simple, composed of numerous capillary bristles. — Perennial herbs. Leaves alternate. Heads crowded in a dense corymb. Disk-flowers yellow.

1. **S. conyzoides,** Nees. Stem slightly pubescent, corymbose above; nearly terete; leaves ciliate on the margins, otherwise smooth, the lower ones spatulate-oblong, serrate above the middle, the upper oblong or lanceolate and entire; involucre top-shaped; pappus rust-color. (Aster conyzoides, *Willd.*) — Dry gravelly or sandy soil, in the middle and upper districts, Georgia and northward. August. — Stem 1°–2° high.

2. **S. solidagineus,** Nees. Smooth; stem angled; leaves lanceolate or linear, obtuse, entire, the lowest spatulate; involucre top-shaped; pappus white. (Aster solidaginoides, *Willd.*) — Low ground in the upper districts. August. — Stem slender, 2° high. Heads smaller than in the last.

3. **S. tortifolius,** Nees. Closely pubescent; leaves short, obovate, rarely serrate, vertical; involucre top-shaped; the scales oblong and slightly spreading at the tips; pappus copious, white. (Aster tortifolius, *Michx.*) — Sandy pine barrens, Florida to North Carolina, and westward. August. — Stem 1°–2° high. Leaves 1′ long.

16. ASTER, Tourn. Aster. Starwort.

Heads many-flowered; the rays (white, blue, or purple) in a single series, pistillate. Scales of the involucre more or less imbricated, mostly with herbaceous or leafy tips. Receptacle flat, pitted. Achenia usually compressed. Pappus a single row of numerous rough capillary bristles. — Perennial (rarely annual) herbs. Leaves alternate. Disk-flowers yellow, often changing to purple.

§ 1. Biotia. — *Involucre obovate-bell-shaped; the scales (pale) closely imbricated, and nearly destitute of herbaceous tips: achenia somewhat 3-angled: bristles of the pappus rigid: leaves large; the lower ones cordate: heads corymbed.*

1. **A. corymbosus,** Ait. Stem slender, smooth; leaves on slender petioles, thin, coarsely serrate, acuminate; the lower ones cordate, the upper oblong; involucre shorter than the disk, the scales obtuse; rays 6–9, white. — Shady woods in the upper districts, Georgia and northward. Sept. and Oct. — Stem 1°–2° high. Leaves 2′–4′ long. Corymbs loose.

2. **A. macrophyllus,** L. Stem stout, rough-pubescent; leaves large, rather thick, rough, mucronate-serrate, acute; the lowest broadly cordate, on slender naked petioles; the upper ovate, on short and winged petioles; involucre nearly as long as the disk; the exterior scales rigid, with spreading fringed tips; rays about 10, pale purple. — Low shady woods, in the upper districts of Georgia, and along the mountains, northward. Sept. — Stem 1½°–2° high. Leaves 4′–6′ long, 2′–4′ wide.

§ 2. Calliastrum. — *Scales of the involucre imbricated in several rows, coriaceous, usually with herbaceous spreading tips: rays* 12 *or more: achenia nearly smooth: pappus of unequal rather rigid bristles, somewhat thickened upward: leaves rigid, none of them cordate: heads large and showy.*

3. **A. mirabilis,** Torr. & Gray. Rough-pubescent; stem corymbosely branched above; leaves ovate, mucronate-serrate, sessile; the lowest abruptly narrowed into a petiole; involucre hemispherical; the scales oblong-linear, obtuse and recurved at the summit; achenia nearly smooth, striate. — Columbia, South Carolina, *Prof. Gibbes.* Sept. — Stem 1°–2° high. — Stem-leaves 1′–3′ long. Rays about 20, blue or violet, elongated.

4. **A. spectabilis,** Ait. Stem corymbose and glandular-pubescent above; leaves oblong-lanceolate, rough on the upper surface, sessile and entire; the lowest tapering into a petiole, and sparingly serrate; heads not numerous, single, terminating the branches; involucre nearly hemispherical, as long as the disk; the scales linear-oblong, with obtuse and spreading glandular tips. (A. surculosus? *Ell.*, with obovate-oblong, mostly serrate leaves, and broader scales of the involucre.) — Pine barrens, Florida and northward. Sept. and Oct. — Rhizoma slender. Stem 1°–2° high. Leaves 2′–4′ long. Heads ½′ in diameter. Rays about 20, 1′ long, deep violet.

5. **A. gracilis,** Nutt. Stem slender, slightly pubescent, corymbose at the summit; leaves rough, oblong, partly clasping, entire; the lowest obscurely crenate and narrowed into a petiole; heads corymbose; involucre (whitish) obconical, as long as the disk; the scales very unequal, acute, the lower ones much shorter, green and slightly spreading at the tips. — North Carolina and Tennessee. Sept. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Heads smallest of this group. Rays about 12, violet.

6. **A. surculosus,** Michx. Stems several from a creeping caudex, slender, pubescent above; leaves lanceolate or linear-lanceolate, acute, smooth, the margins rough and sometimes sparingly serrate, clasping; the lowest narrowed into a petiole; heads solitary, or 3 – 5 in a simple corymb; involucre broadly top-shaped, nearly as long as the disk; the scales linear-spatulate, with abruptly pointed spreading herbaceous tips; the outer ones lanceolate and leaf-like. — Margins of swamps, North Carolina. Sept. — Stems ½° – 1½° high. Lowest leaves 4′ – 6′ long. Heads ½′ wide. Rays numerous, violet.

7. **A. paludosus,** Ait. Stem slightly roughened; leaves linear, rigid, acute, entire, partly clasping, often fringed near the base; heads 3 – 8, racemed or corymbed; involucre hemispherical, as long as the disk; the scales nearly equal, linear-spatulate, with mucronate green and spreading tips. — Low pine barrens, Florida to North Carolina. Sept. and Oct. — Stem 1° – 2° high. Leaves 2′ – 4′ long. Heads ½′ – ¾′ wide. Rays numerous, deep blue.

8. **A. spinulosus,** n. sp. Rhizoma tuberous; stem rigid, sprinkled with white jointed hairs; leaves rigid, narrow-linear, pungent, appressed, the margins fringed with bristly hairs; the lowest ones very numerous and elongated; heads 4 – 8 in a simple spike; involucre bell-shaped, rather shorter than the disk; scales equal, lanceolate-subulate, rigid, erect, spine-pointed, bristly near the base; achenia strongly ribbed. — Damp pine barrens, West Florida, near the coast. June – August. — Stem 10′ – 15′ high. Lowest leaves 6′ – 12′ long, 1″ – 3″ wide; the upper ones 1′ long. Heads ⅓′ wide. Rays 12 – 15, pale blue. Pappus tawny.

9. **A. eryngiifolius,** Torr. & Gray. Rhizoma tuberous; stem rigid, sprinkled with jointed hairs; leaves lanceolate-linear, pungent, the lowest mostly entire; the others erect, and fringed with spiny teeth; heads very large, solitary or 3 – 4 in a loose raceme; involucre hemispherical, shorter than the disk; scales very numerous, herbaceous, rigid, lanceolate, tapering into a long and slender recurved tip; achenia short, oblong. — Low pine barrens, Florida. June – August. — Stem 1° – 2° high. Lowest leaves 4′ – 6′ long. Heads 1′ or more in diameter. Rays numerous, white.

§ 3. ASTER proper. — *Scales of the involucre imbricated in various degrees, with herbaceous tips: rays numerous: achenia flattened: pappus of soft capillary bristles, not thickened upward: autumnal plants.*

* *Leaves uniform, small, sessile, entire, silky or silvery on both sides, mucronate: scales of the involucre imbricated in 3 – several rows: rays violet-purple.*

10. **A. sericeus,** Vent. Stem with numerous branches, bearing the large heads (single or 3 in a cluster) at their summits; leaves oblong-lanceolate, sil-

very; scales of the involucre leafy and spreading; achenia smooth. — A Western species, a form of which, with narrower and less silvery leaves and scales, grows on the mountains of North Carolina. — Stem 10′ – 20′ high. Leaves ½′ – 1′ long. Heads showy.

11. **A. concolor,** L. Stem mostly simple, slender, bearing towards the summit, the middle-sized heads in a long often compound raceme; leaves lanceolate, silky when young; the lowest ones oblong; scales of the obovoid involucre lanceolate, appressed, the subulate tips spreading; achenia silky. — Dry sandy soil, Florida and northward. — Root sometimes tuberous. Stem 1° – 3° high. Leaves erect ½′ – 1′ long.

* * *Leaves rough, all sessile or clasping and entire: heads chiefly solitary, terminating the branchlets: scales of the obovoid or bell-shaped involucre imbricated in several rows, coriaceous, with herbaceous slightly spreading tips: rays purplish-blue: achenia hairy.*

+– *Leaves very small, sessile: heads small: scales of the involucre spatulate.*

12. **A. squarrosus,** Walt. Stem slender, diffuse; leaves oblong or triangular-ovate, reflexed, very rough, sessile; the lowest spatulate. — Dry soil, Florida to North Carolina. — Stem 1° – 2° high. Lowest leaves ½′ long, the others 2″ – 3″ long.

13. **A. adnatus,** Nutt. Stem with the slender branches erect; leaves oblong, very rough, the midrib partly adnate to the stem, free at the apex; the lowest wedge-obovate, free. — Sandy barrens, Florida and Alabama. — Stem 1° – 2° high. Heads smaller than in the preceding.

+– +– *Leaves all clasping and auricled at the base: heads large: scales of the involucre linear.*

14. **A. patens,** Ait. Stem pubescent, loosely panicled above; leaves ovate-oblong, with very rough and wavy margins; those on the slender and spreading branchlets very small. — Var. PHLOGIFOLIUS. Leaves larger, thinner, and less roughened, contracted below the middle; heads often racemose on the short lateral branches. — Dry soil, chiefly in the upper districts. — Stem 1° – 3° high. Leaves 1′ – 2′ (in the var. 3′ – 6′) long. Heads showy.

* * * *Leaves (and stems) smooth: the lowest tapering into a petiole, the others sessile or clasping: heads middle-sized, showy: scales of the obovoid involucre whitish, the short green tips scarcely spreading: rays bright blue: achenia mostly smooth.*

15. **A. lævis,** L. Very smooth and often glaucous; stem rigid, panicled above, bearing the showy heads on short rigid branchlets; leaves oblong or lanceolate, coriaceous, mostly entire and rough on the margins; the upper ones sessile or clasping; scales of the involucre rigid, appressed, with abruptly pointed herbaceous tips. — Open woods in the upper districts. — Stem 2° – 3° high.

16. **A. gracilentus,** Torr. & Gray. Very smooth; stem slender, loosely panicled above, bearing the heads at the end of slender leafy branchlets; leaves linear, elongated; the lower ones coarsely toothed above the middle, the upper slightly clasping and entire; scales of the involucre much shorter than the disk,

lanceolate, acute, appressed. — Lincolnton, North Carolina, *Curtis*. — Stem purple, 2°–3° high. Lower leaves 5′–6′ long, 3″ wide. Heads smaller than those of the preceding.

17. **A. virgatus,** Ell. Stem very smooth, straight, bearing the heads in a single raceme at the summit of the long and slender branches; leaves linear-lanceolate, entire, rough on the margins, partly clasping, the lowest broader and narrowed at the base; scales of the involucre lanceolate, acuminate; the outer ones spreading. — Western districts of Georgia, and westward. — Stem 3°–4° high. Lower leaves 3′–6′ long; those of the branches small and numerous.

18. **A. concinnus,** Willd. Stem nearly smooth, somewhat loosely corymbose; the branches virgate, dichotomous-paniculate; leaves lanceolate, partly clasping, remotely and sharply serrate, with scabrous margins; those of the branchlets oblong, entire; scales of the involucre linear, acute, closely imbricated. (A. cyaneus? *Ell.*) — Florida to North Carolina. — Stem 2°–3° high. Achenia pubescent.

* * * * *Lower leaves large, cordate, on long petioles: heads middle-sized or small, racemed or panicled: scales of the involucre somewhat membranaceous, with short green tips: rays blue or violet.*

+ *Leaves entire, or nearly so.*

19. **A. azureus,** Lindl. Stem roughish, rigid, racemose-compound at the summit, the branches slender; leaves rigid, rough; the lowest ovate-lanceolate or oblong; the upper lanceolate or linear, sessile; those of the branches subulate, appressed; scales of the obconical involucre closely imbricated, abruptly acute. — Dry soil in the upper districts of Georgia and northward. — Stem 2°–3° high. Rays bright blue.

20. **A. Shortii,** Hook. Stem smoothish, slender, racemose-panicled at the summit; leaves nearly smooth, ovate-lanceolate, acute; those of the stem all on slender petioles, and obtuse or cordate at the base, commonly entire; those of the branches oblong, sessile; scales of the bell-shaped involucre linear, closely imbricated, rather obtuse, shorter than the disk. — Mountains of Georgia and westward. — Stem 2°–4° high. Rays violet-blue.

21. **A. undulatus,** L. Pubescent; stem racemose-panicled above; leaves varying from lanceolate to broadly ovate, often wavy or slightly serrate on the margins, roughish on the upper surface; the lowest on long and slender petioles, which are dilated and clasping at the base; the upper on broadly winged petioles, or sessile and clasping; scales of the obovoid involucre linear, appressed, acute. (A. diversifolius, A. sagittifolius, and A. scaber, *Ell.*; the last with smaller leaves, and very rough on both sides.) — Woods, common and very variable. — Stem 2°–3° high. Heads small. Rays pale blue.

22. **A. asperulus,** Torr. & Gray. Roughish; stem racemose-panicled above, or simple; lowest leaves oblong-ovate, obtuse or slightly cordate at the base, sparingly serrate, on slender (not clasping) petioles; the upper oblong, narrowed at the base, sessile or on short winged petioles; those of the branches minute; heads loosely racemed or panicled, small; scales of the hemispherical involucre lanceolate, acute. — Dry gravelly soil, West Florida, Georgia, and westward. — Stem 2° high. Rays pale blue.

+– +– Lowest leaves conspicuously serrate: heads small.

23. **A. cordifolius,** L. Stem commonly smooth, racemose-panicled above; leaves smooth, or rough above and pubescent beneath, all cordate, serrate, and slender-petioled, or the uppermost on short winged petioles, or sessile and entire; heads very numerous in panicled racemes; scales of the obconical involucre loosely imbricated, with obtuse or slightly pointed green tips. — Open woods, in the upper districts. — Stem 1° – 3° high. Leaves commonly thin. Rays pale violet.

24. **A. sagittifolius,** Willd. Stem nearly smooth, racemose-branched above; leaves ovate-lanceolate, acuminate, pubescent; the lowest cordate, on long and mostly margined petioles; the upper abruptly contracted into a winged petiole; those of the branches lanceolate, acute at both ends, entire; heads in dense compound racemes; scales of the oblong involucre rather loosely imbricated, linear-subulate, the tips green and spreading. (A. paniculatus, *Ell.*) — Rich woods, Florida and northward. — Stem 2° – 3° high. Heads more crowded than those of the preceding. Rays purple.

* * * * * *Leaves linear or lanceolate, entire, sessile; radical ones spatulate-lanceolate, serrate: heads small and numerous, racemed: scales of the involucre in several rows, rigid, with spreading or recurved green tips.*

25. **A. ericoides,** L. Smooth; stem much branched; leaves linear-lanceolate, acute at each end; those of the branches subulate; heads racemose, mostly on one side of the spreading branches; scales of the involucre broadest at the base, with acute or subulate tips. — Var. VILLOSUS. Stem and broader leaves rough-hairy, and the smaller heads in shorter and more dense racemes. — Var. PLATYPHYLLUS. Stem (3° – 4°) and larger leaves clothed with soft white hairs; heads larger. — Dry soil, Florida, and northward. — Stem 1° – 2° high. Rays white or pale blue.

26. **A. multiflorus,** Ait. Whitish-pubescent; stem very leafy, and much branched; leaves linear, obtuse at each end, often bristle-pointed, spreading or recurved, the upper ones sessile or somewhat clasping; heads densely racemose on the short and very leafy branches, or sometimes solitary at their summits; scales of the involucre broadest at the apex, obtuse or short-pointed. — Dry sterile soil, in the upper districts. — Stem 1° – 2° high. Leaves about 1′ long. Rays white.

* * * * * *Leaves linear, lanceolate, or oblong, sessile, usually narrowed at the base: heads small or middle-sized: scales of the involucre membranaceous, with appressed or slightly spreading tips: rays pale purple or white.*

+– Heads small.

27. **A. racemosus,** Ell. Rough-pubescent; stem much branched, bearing the small heads in a spiked raceme near the summit of the slender erect branches; leaves linear, sessile, rigid; scales of involucre smooth, linear-subulate; the inner ones as long as the disk; rays very short. — Damp rich soil, Paris Island, South Carolina. — Stem 2° high. Rays pale purple.

28. **A. Baldwinii,** Torr. & Gray. Rough-pubescent; stem slender, panicled above, bearing the solitary or loosely racemose heads on the slender branchlets; leaves very rough, entire; the lowest ovate, on slender margined petioles,

the others sessile or partly clasping; the uppermost very small, erect; scales of the involucre in 3 – 4 rows, linear, acute. — Dry pine barrens, Florida and Georgia. — Stem 1° – 2° high. Lowest leaves 1′ long, the upper ones 2″ – 3″ long, similar to those of No. 13.

29. **A. dumosus,** L. Smoothish; stem slender, racemose-panicled, bearing the small heads chiefly on slender and very leafy branchlets; leaves linear, entire, spreading or reflexed; the lowest spatulate-lanceolate, serrate; those of the branches short, linear-oblong, and mostly obtuse: scales of the involucre closely imbricated in 3 – 6 rows, with obtuse green tips. (A. foliolosus, *Ell.*) — Dry or damp soil, common, and running into several varieties. — Stem 2° – 3° high. Rays pale purple or white.

30. **A. Tradescanti,** L. Stem slender, pubescent, racemose-branched; leaves long, linear-lanceolate, sparingly serrate, tapering into a long and slender point; the uppermost entire; heads in close racemes along the spreading branches; scales of the involucre narrow-linear, acute, imbricated in 3 – 4 rows. — Var. FRAGILIS. Leaves mostly entire; heads fewer, often solitary on the branchlets. (A. tenuifolius, *Ell.*) — Low ground in the upper districts. — Stem 2° – 3° high. Rays pale purple or white.

31. **A. miser,** L. Pubescent or hairy; stem simple, and bearing the small heads in a long and leafy compound raceme, or diffusely branched, with the heads scattered along the branches, or in short few-flowered racemes; leaves varying from linear-lanceolate to wedge-obovate, acute at each end, sharply serrate in the middle; the lowest spatulate, the uppermost entire; scales of the involucre linear, acute. — Low grounds and banks, common and very variable. — Stem 1° – 4° long. Rays white or purplish. A. diffusus, A. divergens, and A. pendulus, of Aiton, are forms of this.

\+ \+ *Heads middle-sized.*

32. **A. simplex,** Willd. Stem smooth or pubescent in lines, corymbose or racemose-branched; heads in short racemes; leaves lanceolate, acute or acuminate at both ends, smooth, rough on the margins, the lower ones sharply serrate; scales of the involucre linear-subulate, loosely imbricated. — Low ground, Florida, and northward. — Stem 3° – 6° high, sparingly or diffusely branched. Leaves 2′ – 4′ long. Rays pale blue.

33. **A. tenuifolius,** L. Nearly smooth; stem paniculately branched; the rather small heads disposed in panicled racemes; leaves long, narrow-lanceolate, tapering to a long and slender point; the lower ones commonly serrate in the middle; scales of the involucre numerous, linear-subulate, appressed. — Low ground in the upper districts, Georgia, and northward. — Stem 2° – 3° high. Leaves 3′ – 6′ long. Rays short, pale purple or white.

* * * * * * * *Leaves lanceolate or oblong, sessile, the upper ones more or less clasping: heads large or middle-sized: scales of the involucre nearly equal, with spreading green tips: rays mostly large and numerous, blue or purple.*

34. **A. Novi-Belgii,** L. Nearly smooth; stem stout; leaves oblong-lanceolate, pale or somewhat glaucous, serrate in the middle, acute or tapering at each end; scales of the involucre rather closely imbricated, with broadish

acute herbaceous tips; rays pale blue or purplish. — Georgia and South Carolina. — Stem 1°–4° high. Leaves thickish, the lowest 5′–6′ long. Heads sometimes 1′ in diameter.

35. **A. longifolius,** Lam. Stem nearly smooth, corymbose-panicled above; leaves long, lanceolate, acuminate, shining above, the lowest narrowed at the base, and serrate in the middle, the upper sessile or partly clasping; heads solitary or few on the rigid branchlets; scales of the involucre linear, with green and subulate, or broader and abruptly pointed spreading tips; rays purplish-blue. — Swamps, Georgia, and northward. — Stem 1°–3° high. Leaves 3′–6′ long. Heads showy.

36. **A. Elliottii,** Torr. & Gray. Stem stout, smooth, very leafy, corymbose-branched; the branches short and pubescent in lines; leaves large, oblong-lanceolate, acute, serrate, narrowed toward the base, and partly clasping; the lowest spatulate-oblong, obtuse, crenate; heads corymbed at the ends of the branches; scales of the involucre subulate, with long and spreading tips; rays pale purple. (A. puniceus, *Ell.*) — Swamps, Florida to North Carolina. — Stem 2°–3° high. Leaves 4′–6′ long, or the lowest 1° long.

37. **A. puniceus,** L. Stem hispid, panicled above; leaves lanceolate or oblong-lanceolate, acuminate, sharply serrate, very rough above, auriculate and clasping at the base; scales of the involucre linear-subulate, in about two rows; rays numerous and showy. — Swampy thickets along the mountains of North Carolina, and northward. — Stem 3°–5° high, commonly purplish. Rays violet-purple.

38. **A. prenanthoides,** Muhl. Stem pubescent in lines, corymbose at the summit; leaves ovate-lanceolate, acuminate, sharply serrate in the middle, contracted into a broadly winged petiole, which is dilated and clasping at the base, rough above; scales of the involucre narrow-linear, imbricated in 3–4 rows, with spreading green tips. — Damp woods, North Carolina, and northward. — Stem 1°–3° high. Leaves thin, 5′–6′ long. Rays pale purple.

* * * * * * * * *Leaves lanceolate or oblong, entire, sessile or clasping: heads large, in corymbs or racemes: scales of the involucre numerous, with spreading green summits: rays numerous, showy.*

39. **A. grandiflorus,** L. Stem rigid, rough with bristly hairs, sparingly branched; leaves small, linear-oblong, sessile, hispid, commonly reflexed; heads very large, solitary, terminating the branches; scales of the involucre rigid; the outer ones with obtuse spreading tips, the inner erect, acute; rays violet. (A. ciliatus, *Walt.?*) — Dry soil in the upper districts. — Stem 2°–3° high. Leaves 1′–2′ long. Heads 1′ in diameter.

40. **A. Curtisii,** Torr. & Gray. Smooth throughout; stem simple, slender; leaves membranaceous, lanceolate, entire or slightly serrate, acuminate, sessile; heads in a simple or slightly compound terminal raceme; scales of the involucre linear-spatulate, coriaceous, the green and spreading tips barely acute; rays purple. — Mountains of North Carolina. — Stem 2°–3° high. Leaves 3′–4′ long. Heads ½′–¾′ in diameter.

41. **A. Carolinianus,** Walt. Stem long and trailing; the branches and leaves closely pubescent; leaves short, oblong, acute, abruptly contracted into a short auriculate-clasping petiole; heads single, or somewhat racemose at the ends of the branches; scales of the involucre narrow-linear, with recurved subulate tips; rays slender, pale purple. — River-swamps, Florida to South Carolina. — Stem 4° – 10° long. Leaves 1′ – 2′ long.

42. **A. Novæ-Angliæ,** L. Stem hairy or hispid, corymbose above; leaves lanceolate, acute, pubescent, scarcely narrowed at the auriculate-clasping base; heads corymbed; scales of the involucre linear-subulate, loosely imbricated, viscid; rays violet-purple. — Upper districts, in low ground, and northward. — Stem 2° – 4° high, mostly purple. Leaves 2′ – 3′ long. Heads ½′ or more in diameter, numerous and showy.

§ 4. ORTHOMERIS. — *Scales of the involucre regularly imbricated, scarious on the margins, without herbaceous tips: pappus soft-hairy.*

43. **A. acuminatus,** Michx. Pubescent; stem erect, corymbose above; leaves large, oblong-lanceolate, acuminate, coarsely serrate, tapering at the base; heads corymbed, on slender naked peduncles; scales of the involucre linear-lanceolate; rays white. — Mountains of North Carolina, and northward. Sept. — Stem 1° – 1½° high. Leaves thin, 3′ – 5′ long, strongly veined.

§ 5. OXYTRIPOLIUM. — *Scales of the involucre without herbaceous tips, scarious on the margins: pappus soft-hairy: stems smooth and slender: leaves narrow, entire, mostly fleshy.*

* *Perennial: scales of the involucre imbricated in several rows: rays conspicuous.*

44. **A. Chapmanii,** Torr. & Gray. Stem erect, straight, branched above; lower leaves long (3′ – 9′), linear, spreading, the upper scattered, subulate, erect; heads large, solitary, terminating the slender branches; scales of the involucre lanceolate, rigid; rays showy, purple; achenia smooth, many-ribbed. — Pine-barren swamps, West Florida. Oct. — Stem 2° – 3° high.

45. **A. flexuosus,** Nutt. Stem mostly reclining, flexuous, sparingly branched; leaves fleshy, narrow-linear; heads few, scattered, terminal, small; scales of the involucre narrow-linear, very acute, the lower ones smaller and passing into bracts; achenia slightly hairy, 5-ribbed. — Salt marshes, common. Oct. — Stem 1° – 3° long. Rays white or pale purple.

* * *Annual: scales of the involucre in 2 – 3 rows: rays short.*

46. **A. linifolius,** L. Stem paniculately much branched; leaves linear-lanceolate, tapering at each end; those of the branches linear or filiform, sessile; heads small, very numerous, in leafy racemes; scales of the cylindrical involucre linear-subulate, smooth; rays in two rows, not longer than the disk; achenia somewhat hairy, 5-ribbed. — Wet places along the coast, Florida, and northward. Oct. — Stem 2° – 3° high. Lowest leaves sharply serrate.

47. **A. divaricatus,** Nutt. Stem diffusely branched; leaves linear-subulate; the lowest ones linear, tapering at the base; heads small, loosely panicled, on spreading peduncles; scales of the involucre linear-subulate, smooth; rays in a single row, longer than the disk; achenia 4-ribbed, hairy. — Salt marshes,

Florida to South Carolina. Sept. — Stem 1° – 3° high. Lowest leaves oval or lanceolate, toothed; those of the branches short and bract-like. Rays blue.

48. **A. exilis,** Ell. Very glabrous; stem slender, tall, sparingly branched; leaves very long, linear-subulate; heads in racemes; scales of the involucre linear-lanceolate, half as long as the rays. — Damp soil, in the Western districts of Georgia. Sept. and Oct. — Stem 4° – 5° high. Lowest leaves 4′ – 6′ long, 1″ wide. Rays pale purple. Achenia pubescent.

17. ERIGERON, L. Fleabane.

Heads mostly hemispherical, many-flowered. Rays very numerous, pistillate. Scales of the involucre nearly equal, in 1 – 2 rows. Receptacle flat, naked. Achenia compressed. Pappus a single row of capillary bristles; or with an outer row of short chaffy scales or bristles. — Herbs. Leaves alternate. Rays white or purplish.

** Pappus double.*

1. **E. strigosum,** Muhl. Annual, rough-pubescent; stem slender, corymbose-panicled above; leaves entire or sparingly serrate, the lowest oblong, tapering into a slender petiole, the upper lanceolate or linear, sessile, distant; heads small, corymbose-panicled; rays white or rose-color; outer pappus short and chaffy. — Dry old fields, common. June. — Stem 2° high.

** * Pappus single.*

+ Annual: rays shorter than the disk.

2. **E. Canadense,** L. Hirsute or smoothish; stem much branched; leaves linear-lanceolate; heads very numerous, in panicled racemes, small, cylindrical; rays white; disk-flowers 4-toothed. — Old fields, common. May – Sept. — Stem 1° – 3° high.

+ + Perennial: rays conspicuous.

3. **E. Philadelphicum,** L. Hairy; stem corymbose-branched above; leaves thin, toothed or entire; the lowest spatulate-oblong; the upper oblong-lanceolate, clasping; rays very numerous and narrow, purplish. (E. quercifolium, *Lam.*, with the lowest leaves pinnately toothed.) — Low ground, Florida, and northward. May. — Stem 2° – 4° high.

4. **E. bellidifolium,** Muhl. Hairy or villous; stem simple; lowest leaves spatulate or obovate, toothed above the middle; the upper oblong, sessile and entire; heads large, solitary or corymbose; rays broadly linear, bluish-purple. — Open woods and banks in the upper districts. March and April. — Stem 1° high, stoloniferous.

5. **E. vernum,** Torr. & Gray. Smooth or nearly so; stem simple, scape-like; radical leaves clustered, thick, spatulate or obovate, entire or slightly toothed; the others small and remote; heads corymbed; rays (about 30) white. (E. nudicaule, *Michx.*) — Pine-barren swamps, Florida to North Carolina, and westward. March and April. — Rhizoma thick. Stem 1° – 2° high.

18. DIPLOPAPPUS, Cass.

Heads many-flowered. Rays 8 – 12, pistillate. Scales of the involucre imbricated, without herbaceous tips. Receptacle flat, alveolate. Pappus of capillary

bristles in two rows, the outer row much shorter. — Perennial erect herbs. Leaves alternate. Heads single or corymbose. Rays white or purple.

* *Rays purple.*

1. **D. linariifolius,** Hook. Stem rigid, simple, closely pubescent; leaves numerous, linear, spreading, the margins very rough; heads solitary or somewhat racemose; scales of the involucre imbricated in several rows, linear, appressed; achenia silky. — Dry open woods, West Florida to Mississippi, and northward. September. — Stem 1° high. Leaves 1′ long.

* * *Rays white.*

2. **D. cornifolius,** Darl. Stem pubescent; leaves elliptical, tapering at each end, hairy on the margins and veins beneath; heads few, on slender spreading peduncles; achenia smooth. — Upper districts of Carolina, and northward. August. — Stem 1° – 2° high. Leaves 2′–4′ long.

3. **D. amygdalinus,** Torr. & Gray. Stem roughish and corymbose above; leaves oval or oblong, acute at each end, nearly smooth; heads numerous, corymbed; scales of the involucre obtuse; achenia hairy. — Swamps, Florida, and northward. September. — Stem 2° – 4° high; the branches spreading. Leaves 1½′ – 2′ long.

4. **D. umbellatus,** Torr. & Gray. Stem smooth, corymbose above; leaves lanceolate, acuminate; scales of the involucre acutish; achenia hairy. — Swamps in the upper districts. September. — Stem 3° – 6° high. Branches erect. Leaves 3′ – 5′ long.

5. **D. obovatus,** Torr. & Gray. Closely pubescent; stem simple, scaly at the base; leaves oblong, sessile, strongly veined; heads large, corymbed, on long and naked (whitish) peduncles; scales of the involucre acute; achenia hairy. (Aster obovatus and A. dichotomus, *Ell.*) — Low pine barrens, Florida to South Carolina. May – July. — Stem 1° – 2° high. Leaves 1′ – 2′ long.

19. BOLTONIA, L'Her.

Heads many-flowered. Rays pistillate. Scales of the hemispherical involucre imbricated in two rows, not longer than the disk. Receptacle hemispherical or conical, obscurely alveolate. Achenia flattened, obovate, wing-margined. Pappus composed of several short chaffy scales; that of the disk-flowers mostly with 2 – 4 longer awns. — Perennial herbs, resembling Asters.

1. **B. diffusa,** Ell. Stem with long and slender branches; leaves linear, entire; heads small, terminal; achenia narrowly margined, hairy; pappus very short, 2-awned. — Damp soil, Florida to North Carolina, and westward. Sept. and Oct. — Stem 3° – 4° high. Rays purplish.

2. **B. glastifolia,** L'Her. Stem paniculate; leaves rigid, lanceolate, sparingly serrate; the upper ones linear, entire; heads rather large; achenia broadly margined; pappus of few short bristles, and 2 – 4 long awns. — River swamps, Florida, and northward. July – Sept. — Stem 3° – 5° high. Rays white.

3. **B. asteroides,** L'Her. Stem paniculate, the branches short; leaves lanceolate, entire; achenia smooth, narrow-margined; pappus very short, without awns. — Swamps, North Carolina. Stem 2° – 3° high. Heads intermediate in size between the two preceding.

20. SOLIDAGO, L. Golden-rod.

Heads few or many-flowered. Rays 1 – 16, rarely wanting, pistillate. Disk-flowers tubular, perfect. Scales of the involucre imbricated, rarely with spreading tips. Receptacle flat, mostly alveolate. Achenia terete, many-ribbed. Pappus simple, of numerous scabrous mostly capillary bristles. — Perennial (rarely shrubby) erect plants, with alternate leaves, and small heads of yellow flowers.

§ 1. Chrysastrum. — *Scales of the involucre with herbaceous spreading tips: bristles of the pappus unequal, some of them thickened upward: racemes short, forming a long and narrow leafy panicle.*

1. **S. discoidea,** Torr. & Gray. Pubescent or hairy; stem simple or branched; leaves ovate, acute, abruptly narrowed into a petiole, the lower ones coarsely serrate; racemes composed of 3 – 6 large 10 – 15-flowered heads; rays none; achenia smooth. (Aster? discoideus, *Ell.*) — Rich woods, Florida, Georgia, and westward. September. — Flowers yellowish-white. Stem 3° – 5° high.

2. **S. squarrosa,** Muhl. Stem stout, simple, pubescent above; leaves large, smoothish, oblong, acute, serrate, the lower ones tapering into a long winged petiole; the upper sessile and entire; racemes shorter than the leaves, composed of 3 – 6 clustered heads; rays 12 – 16, showy; achenia smooth. — Mountains of Georgia, and northward. September. — Stem 2° – 4° high. Lowest leaves 6′ – 8′ long. Heads 16 – 24-flowered.

§ 2. Virgaurea. — *Scales of the involucre appressed: rays mostly fewer than the disk-flowers, rarely wanting: racemes racemose, corymbose, or panicled.*

* *Racemes not* 1*-sided; leaves feather-veined.*

+– *Racemes axillary, cluster-like, usually shorter than the leaves: the uppermost often crowded and racemose: leaves uniform, serrate.*

3. **S. pubens,** M. A. Curtis. Stem simple, slender, pubescent; leaves thin, oval-lanceolate, acuminate at each end, coarsely serrate, pubescent; racemes dense, the upper ones racemose; heads 8 – 14-flowered; rays 4 – 7; scales of the involucre obtuse, villous-pubescent; achenia hoary. — Upper and mountainous parts of North Carolina, *Curtis.* August. — Stem 2° – 3° high. Leaves 3′ – 5′ long.

4. **S. Buckleyi,** Torr. & Gray. Villous-pubescent; leaves oblong, acute at each end, coarsely serrate, smoother above; racemes loose, all separate and much shorter than the leaves; heads 15 – 20-flowered; rays 4 – 6; scales of the involucre rather acute, nearly smooth; achenia short and smooth. — Interior of Alabama, *Buckley.* October. — Stem 2° high. Leaves 3′ long.

5. **S. latifolia,** L. Stem smooth, simple, angled; leaves oval or ovate, acuminate, abruptly contracted at the base, unequally toothed-serrate, mostly

pubescent beneath; racemes roundish or oblong, much shorter than the leaves, the upper ones more or less racemose; heads about 10-flowered; rays 3 – 4; scales of the involucre smoothish, obtuse; achenia silky-pubescent. (S. flexicaulis, *Ell.*) — Shady woods in the upper districts. September. — Stem 1° – 2° high, often flexuous. Leaves 3′ – 5′ long, 2′ – 3′ wide. Racemes sometimes longer than the leaves.

6. **S. cæsia,** L. Stem slender, often branching, smooth and glaucous; leaves smooth, lanceolate, acuminate, sessile, sharply serrate; racemes all distinct, roundish, much shorter than the leaves; the lowest rarely elongated; heads about 10-flowered; rays 3 – 4, large, bright yellow; scales of the involucre smooth, obtuse; achenia pubescent. — Damp shady woods and banks, Florida and northward. September. — Stem 2° – 3° high, often purple. Leaves 3′ – 5′ long, ½′ – 1′ wide. Racemes in all the upper axils.

7. **S. Curtisii,** Torr. & Gray. Smoothish; stem tall, not glaucous, straight and mostly simple, striate-angled; leaves lanceolate or obovate-lanceolate, acuminate at each end, sharply serrate above the middle, sessile; racemes dense, much shorter than the leaves; heads 8 – 12-flowered; rays 4 – 6; scales of the involucre oblong-linear, obtuse; achenia hoary-pubescent. — Mountains of North Carolina and Tennessee. September. — Stem 2° – 3° high. Leaves 5′ – 6′ long.

8. **S. monticola,** Torr. & Gray. Smoothish; stem terete, simple and slender, puberulent above; leaves very thin, oblong-lanceolate, acuminate, slightly serrate; the upper ones small and bract-like; racemes sessile, the uppermost approximate and nearly as long as the leaves; heads about 15-flowered; scales of the involucre linear, acute; achenia smooth. — Mountains of North Carolina, *Curtis.* September. — Leaves and flowers smaller than the last.

9. **S. lancifolia,** Torr. & Gray. Smooth; stem tall, simple, angled; leaves long-lanceolate, acuminate, finely serrate, sessile; racemes approximate, peduncled, somewhat compound; the upper ones longer than the reduced leaves; heads nearly sessile; scales of the involucre oblong, very obtuse, minutely granular; achenia hairy. — Mountains of North Carolina. September. — Stem 3° high. Leaves 4′ – 5′ long. Heads large.

+– +– *Racemes crowded in racemose or pyramidal terminal panicles, longer than the leaves (except No.* 15): *lowest leaves large, commonly tapering into a petiole, the uppermost small, sessile and entire.*

10. **S. bicolor,** L. Pubescent; stem simple, or branching above; lowest leaves spatulate-oblong, serrate; the upper lanceolate; panicle racemose, the lowest racemes shorter than the leaves; heads about 20-flowered; rays 7 – 9, short, whitish; scales of the involucre obtuse. — Dry soil in the upper districts, and northward. September. — Stem 1° – 2° high. Radical leaves 2′ – 5′ long.

11. **S. puberula,** Nutt. Minutely pubescent; stem simple, virgate; lowest leaves spatulate-oblong, serrate above the middle; the upper lanceolate; panicle dense, racemose or pyramidal; heads about 30-flowered; rays about 10; scales of the involucre subulate; achenia smoothish. (S. pubescens, *Ell.*) — Dry sandy soil, Mississippi, and northward.

Var. **pulverulenta.** Upper leaves shorter, oblong-obovate; scales of the (20–25-flowered) involucre linear-lanceolate; achenia smooth. (S pulverulenta, *Nutt.*) — Damp pine barrens, Florida to North Carolina. Sept. and Oct. — Stem 2°–4° high, often purplish. Lowest leaves 2′–4′ long. Flowers middle-sized, bright yellow.

12. **S. petiolaris,** Ait. Minutely pubescent; stem mostly simple, straight, very leafy; leaves oblong-lanceolate or elliptical, acute, rough on the margins, all but the lowest entire, and nearly sessile; panicle racemose or oblong; heads large, 20–25-flowered; rays about 10, showy; scales of the involucre linear, pubescent; the outer ones more or less spreading; achenia smoothish. (S. elata? *Ell.*) — Dry sandy soil, Florida to North Carolina. Sept. — Stem 2°–3° high. Leaves 1′–2′ long.

13. **S. speciosa,** Nutt. Stem stout, mostly simple, smooth below, pubescent above; leaves smooth, the lowest large (5′–8′ long, 1½′–2′ wide), serrate; the upper ones lanceolate; panicle compact, pyramidal; heads rather large, crowded, 15–20-flowered; rays 6–8, showy; scales of the involucre lanceolate, obtuse; achenia smooth. — Varies, with the stem and lower surface of the broader (2′–3′) leaves villous; the fewer, larger, and more scattered heads about 30-flowered (S. petiolaris, *Ell.?*); or every way smaller; the short racemes forming a narrow racemose panicle (S. erecta, *Ell.*). — Dry soil, Florida to Mississippi, and northward; the first variety only in the upper districts. Sept. and Oct. — Stem 3°–5° high, often purplish.

14. **S. verna,** Curtis. Closely pubescent and somewhat hoary; stem simple, or panicled above; leaves thin, roughish, the lowest oblong, abruptly narrowed into a long and slender petiole, the upper ones sessile and entire; racemes very slender, spreading, forming an open somewhat corymbose panicle; heads rather large, scattered, about 30-flowered; rays narrow; scales of the involucre linear; achenia pubescent. — Pine barrens, near Wilmington, North Carolina, *Curtis.* May and June. — Stem 2°–3° high. Lowest leaves 3′–5′ long.

15. **S. glomerata,** Michx. Smooth; stem stout, simple; leaves large, oblong-lanceolate, acuminate at each end, sharply serrate, the lowest tapering into a petiole; racemes cluster-like, much shorter than the leaves; the upper ones approximate and racemose; heads very large, 30–40-flowered; rays 10–12; scales of the involucre acute, smooth; achenia pubescent. — High mountains of North Carolina. Sept. — Stem 1°–2° high. Leaves 4′–9′ long.

\+ \+ \+ *Racemes corymbose.*

16. **S. rigida,** L. Rough-pubescent and somewhat hoary; stem stout; leaves rigid, oval or oblong, serrate, sessile; the lowest narrowed into a petiole; corymb compact; heads very large, 30–35-flowered; rays 7–10; scales of the involucre oblong, obtuse; achenia smooth. — Mountains of Georgia and northward. Sept. — Stem 3°–4° high. Lowest leaves 6′–9′ long.

17. **S. corymbosa,** Ell. Stem erect, smooth; the branches rough-hairy; lower leaves oblong-lanceolate, the upper ovate; all fleshy, rigid, smooth, but very rough and fringed along the margin; racemes corymbose, the lower recurved; rays long. — Middle districts of Georgia. Sept. and Oct. — Stem stout,

4° – 6° high. Lower leaves 4′ – 6′ long. Scales of the involucre oval. Rays about 10. (*)

18. **S. spithamæa,** M. A. Curtis. Stem low (8′ – 12′), rigid, soft-hairy; leaves oblong-lanceolate, smooth, sharply serrate, acute; the lowest tapering into a petiole; corymb dense, compound; heads 25 – 30-flowered, rays 6 – 7, short; scales of the involucre lanceolate, acute; achenia pubescent. — On the summit of Roan and Hanging Rock Mountains, North Carolina, *Curtis*. Sept. — Stems tufted. Leaves 1′ – 3′ long.

* * *Racemes* 1-*sided, mostly compound, spreading or recurved* (*in Nos.* 20 *and* 21 *often erect*), *commonly disposed in a pyramidal panicle.*

+ *Smooth species, growing in marshes: stems virgate: leaves very numerous, more or less fleshy; the lowest elongated and tapering into a margined petiole; the upper small and passing into bracts: heads middle-sized: achenia pubescent.*

19. **S. flavovirens,** n. sp. Smooth throughout; stem stout, simple; leaves oblong, obtuse or mucronate; the lowest serrate, on winged petioles, the upper entire, narrowed at the base; panicle pyramidal; heads 10 – 12-flowered; rays mostly 3, showy; scales of the involucre lanceolate, acutish. — Brackish marshes, Apalachicola, Florida. Sept. — Whole plant yellowish-green. Stem 2° – 6° high. Lowest leaves 5′ – 10′ long, somewhat fleshy, obscurely ribbed. Heads rather large.

20. **S. virgata,** Michx. Smooth; stem slender, rarely branched; leaves somewhat fleshy, entire; the lowest oblong-spatulate, sometimes slightly serrate, veiny; the upper very small, lanceolate, appressed; panicle racemose, erect, or pyramidal, with the lower racemes 1-sided; heads 12 – 16-flowered; rays 5 – 7; scales of the involucre lanceolate, acute. — Pine-barren swamps, Florida to Mississippi, and northward. Sept. — Stem 3° – 5° high.

21. **S. angustifolia,** Ell. Smooth; stem slender, simple, or branched above; leaves fleshy, entire, the lowest lanceolate, the upper linear and acute; panicle racemose or pyramidal, lower racemes spreading and 1-sided; heads rather small, about 10-flowered; rays 5, narrow; scales of the involucre linear, obtuse. — Salt marshes, Florida to North Carolina. Oct. — Stem 2° – 4° high.

22. **S. sempervirens,** L. Stem simple, or branched above; lowest leaves lanceolate-oblong, entire, fleshy, long-petioled; the upper lanceolate, acute, sessile or partly clasping; panicle contracted or pyramidal; heads rather large; rays 7 – 10; scales of the involucre linear, acutish. (S. limonifolia, *Pers.*) — Salt marshes, Florida, and northward. Sept. and Oct. — Stem 3° – 8° high. Leaves varying in thickness, the lowest 6′ – 12′ long.

+ + *Stems* (*smooth*) *commonly branching: leaves not fleshy, serrate, veiny; the lowest ample, tapering into a margined petiole: panicles pyramidal, or racemose on the spreading branches.*

23. **S. patula,** Muhl. Stem stout, strongly angled; leaves large, ovate or oblong, acute, very rough above, smooth beneath; panicles dense, leafy; peduncles pubescent; rays 6 – 7; achenia sparsely pubescent. — Swamps, Georgia, and northward. — Leaves 6′ – 12′ long.

Var. **strictula,** Torr. & Gray. Stem simple, or with few elongated rough-pubescent branches; leaves smaller; racemes short, forming a long and slender compound raceme. (S. salicina, *Ell.*) — Swamps, Florida, and northward. Sept. and Oct. — Stem 4° – 6° high.

24. **S. arguta,** Ait. Smooth; leaves sharply serrate, acute or acuminate at each end, the lowest elliptical or lanceolate-oblong, somewhat 3-ribbed, on winged and ciliate petioles; the upper sessile; panicle dense, somewhat corymbose; heads small, crowded, 18 – 20-flowered; rays 8 – 12, small; scales of the involucre obtuse; achenia nearly smooth. (S. juncea, *Ait.*, a form with narrower and less strongly serrate leaves, the upper ones entire.) — Rich soil in the upper districts. Sept. — Stem 2° – 4° high.

25. **S. Boottii,** Hook. Stem smooth, or pubescent above; leaves lanceolate or oblong, acute or acuminate at each end, appressed-serrate, smooth or more or less pubescent; panicle open, oblong or pyramidal; heads about 12-flowered; rays 5; scales of the involucre obtuse; achenia nearly smooth. — Varies, with longer, narrower, and more sharply serrate leaves, and slender racemose panicles towards the summits of the spreading branches. (S. juncea? *Ell.*) — Sandy soil, Florida to North Carolina. Sept. — Stem 2° – 3° high, often purplish. Heads larger and leaves more rigid than in the last.

26. **S. gracillima,** Torr. & Gray. Smooth; stem slender; lowest leaves spatulate-lanceolate, obtuse, serrate near the apex; the others linear and entire; heads rather large, 9 – 12-flowered, forming a narrow compound raceme at the summit of the stem and branches; rays mostly wanting; scales of the involucre oblong, obtuse; achenia pubescent. — Dry pine barrens, Middle Florida. Oct. — Stem 2° high.

+ + + *Leaves very numerous, gradually diminishing in size upward, veiny, sessile, or the lowest narrowed into a short petiole: heads small.*

27. **S. altissima,** L. Stem hirsute; leaves ovate or oblong, acute, serrate, rough above, pubescent, especially on the veins beneath, often rugose, prominently veined; panicle leafy, often narrow and elongated; the racemes slender and recurved; scales of the 10 – 15-flowered involucre linear; rays 6 – 9, small; achenia pubescent. (S. rugosa, S. ulmifolia, and S. aspera, *Ell.*) — Low thickets, Florida, and northward. Sept. and Oct. — Stem 2° – 6° high, commonly branching. Leaves variable in texture and pubescence, being thin and smoother in shady places, and more rigid, rougher, and often rugose in places more exposed.

28. **S. ulmifolia,** Muhl. Stem smooth, or softly pubescent above; leaves ovate-lanceolate, acuminate, serrate, smooth on the upper surface, paler and pubescent on the veins beneath; panicle loose, spreading; heads about 10-flowered; rays 4 – 5; scales of the involucre acutish; achenia nearly smooth. — Low ground in the upper districts of Alabama, and northward. Sept. — Stem 2° – 3° high. Leaves thin, 2′ – 3′ long.

29. **S. Elliottii,** Torr. & Gray. Smooth; stem mostly simple; leaves oblong-lanceolate or elliptical, sessile, acute, finely serrate, the upper often entire; racemes crowded, forming a pyramidal panicle; scales of the 13 – 20-

flowered involucre linear, obtuse; rays 5–7; achenia minutely pubescent. (S. elliptica? *Ell.*) — Damp soil near the coast, Georgia to North Carolina. Sept. — Stem 3°–6° high. Leaves very numerous, 2′–3′ long.

30. **S. pilosa,** Walt. Stem hirsute, simple, or branching above; leaves very numerous, oblong-lanceolate, slightly serrate, mucronate, rough above, pubescent on the veins beneath; racemes numerous, slender, forming a pyramidal or somewhat corymbose panicle; heads narrow, 12–15-flowered; rays 7–10, small; scales of the involucre linear; achenia slightly pubescent. (S. pyramidata, *Pursh.* S. villosa, *Ell.*) — Low ground, Florida, and northward. Sept. and Oct. — Stem 2°–8° high. Leaves 2′–3′ long.

31. **S. odora,** Ait. Stem mostly simple, pubescent in lines; leaves entire, varying from linear-lanceolate to oblong-ovate, smooth on both surfaces, rough on the margins, punctate with pellucid dots, often reflexed; panicle pyramidal, mostly one-sided; heads 5–7-flowered; rays about 3, showy; achenia hairy. (S. retrorsa, *Michx.*) — Dry soil, Florida and northward. Oct. — Stem 2°–3° high. Leaves 1′–2′ long. — Plant anise-scented.

32. **S. tortifolia,** Ell. Stem straight, simple or branched, rough-pubescent above; leaves small, linear, entire, or the lowest slightly serrate, often twisted, pubescent on the margins and midrib; panicle dense, pyramidal; heads small, 6–9-flowered; rays 3–4; scales of the involucre linear, obtuse; achenia slightly pubescent. — Dry sandy soil, Florida to North Carolina. Sept. — Stem 2°–3° high. Leaves very numerous, 1′–2′ long.

33. **S. brachyphylla,** Chapm. Stem slender, pubescent, sparingly branched; leaves smooth or pubescent on the veins, finely serrate, the lowest spatulate, the upper oval or orbicular; racemes short, forming a compound raceme toward the end of the spreading branches; scales of the 3–5-flowered involucre rigid, obtuse; rays none; achenia pubescent, as long as the rigid pappus. — Dry light soil, Georgia, Florida, and westward. Sept. — Stem 2°–3° high. Leaves 1′–2′ long.

+ + + + *Lowest leaves cordate, on long petioles: heads in simple or compound racemes, 8–10-flowered: pappus rigid, equalling or shorter than the hairy achenia.*

34. **S. amplexicaulis,** Torr. & Gray. Pubescent and roughish; stem slender, sparingly branched above; leaves sharply serrate, acute, the lowest broadly cordate; those of the stem ovate, abruptly contracted into a broadly winged and clasping petiole, the uppermost small, sessile, and entire; racemes slender, often simple; rays 1–3; pappus as long as the achenium. — Dry open woods, West Florida, and westward. Oct. — Stem 2°–3° high.

35. **S. cordata,** Short. Pubescent; stem sparingly branched above; leaves acute, on wingless petioles; the lowest large, coarsely serrate, cordate, the others ovate, sharply serrate, on short petioles; the uppermost entire, sessile; racemes compound, terminating the spreading branches, composed of crowded cluster-like racemes; the lower ones scattered; scales of the 8–10-flowered involucre rigid, obtuse; rays 5–6; pappus much shorter than the achenium. (Brachychæta, *Torr. & Gray.*) — Mountains of Georgia and North Carolina, and northward. Sept. — Stem 2°–3° high. Lowest leaves 3′–5′ wide.

+ + + + + *Leaves more or less prominently 3-ribbed.*

36. **S. nemoralis,** Ait. Plant grayish, minutely pubescent and roughened; stem mostly simple; leaves obscurely 3-ribbed; the lowest spatulate-oblong or lanceolate, serrate; the upper lanceolate, acute, narrowed toward the base, mostly entire; panicle dense, oblong or pyramidal, recurved; heads 10 – 12-flowered; rays 6 – 7; achenia hairy. — Old fields and open woods, common. — Stem 1° – 2° high.

37. **S. Leavenworthii,** Torr. & Gray. Stem simple, minutely pubescent and roughish; leaves very numerous, smooth, linear-lanceolate, entire; the lowest sparingly serrate; panicle pyramidal; heads rather large; rays 10 – 12; achenia pubescent. — Damp soil, Florida to South Carolina. Oct. — Stem 2° – 3° high. Leaves 2′ – 3′ long, 3″ – 4″ wide, faintly ribbed.

38. **S. Canadensis,** L. Stem pubescent and often rough; leaves lanceolate, acute or acuminate, sharply serrate, rough above, pubescent beneath; panicles pyramidal, dense; heads small; rays very short; achenia pubescent. — Varies (S. procera, *Ell.*), with a more hairy stem, less serrate leaves, the upper entire, and larger heads and rays. — Margins of fields, &c. Florida, and northward. Oct. — Stem 3° – 8° high.

39. **S. serotina,** Ait. Stem smooth, often purple; leaves lanceolate, acuminate, serrate, rough above, pubescent on the veins beneath; panicle pyramidal, of numerous recurved racemes; rays short; mature achenia smooth. — Low ground, Florida, and northward. Oct. — Stem stout, 4° – 8° high. Heads larger than in the last, but smaller than those of the next species.

40. **S. gigantea,** Ait. Stem smooth; leaves smooth, lanceolate, acuminate, sharply serrate, rough on the margins; panicle large, pyramidal, pubescent; rays small; achenia pubescent. — Margins of fields, &c., Alabama, and northward. Sept. and Oct. — Stem 2° – 6° high.

§ 3. CHRYSOMA. — *Stem shrubby: leaves impressed-punctate, veinless: rays* 1 – 3: *receptacle conical, naked.*

41. **S. pauciflosculosa,** Michx. Stem, leaves, and involucre viscid; leaves spatulate-lanceolate or linear, obtuse, entire, the lowest scale-like; panicle 1-sided; the clusters erect, on naked peduncles; heads 4 – 7-flowered; scales of the involucre obtuse; achenia pubescent. — Sandy banks and shores, Florida to South Carolina. Oct. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Rays large.

§ 4. EUTHAMIA. — *Herbaceous: leaves narrow, entire,* 1 – 5-*nerved: heads corymbose: rays more numerous than the disk-flowers: receptacle bristly: involucre viscid.*

42. **S. lanceolata,** L. Stem pubescent above, corymbose; leaves linear-lanceolate, roughish on the upper surface, pubescent on the veins beneath, 3 – 5-nerved; heads obconical, mostly sessile, in dense clusters; rays 15 – 20. — Damp soil, Georgia, and northward. — Stem 2° – 3° high.

43. **S. tenuifolia,** Pursh. Nearly smooth; stem corymbosely much branched; leaves linear, 3-nerved, glandular-dotted; heads few in a cluster,

often pedicelled, top-shaped; rays about 10. — Low sandy places, common. Oct. — Stem 2° high. Heads smaller than those of the preceding.

21. BIGELOVIA, DC.

Heads 3 – 4-flowered; the flowers all tubular and perfect. Involucre cylindrical-club-shaped, as long as the flowers; the scales linear, rigid, appressed, somewhat viscid. Receptacle narrow, cuspidate. Achenia terete, striate, hairy. Pappus simple, of numerous scabrous capillary bristles. Styles scarcely exserted. — A smooth erect perennial herb, with narrow obtuse and entire leaves, and small heads of yellow flowers, disposed in a compound corymb.

1. **B. nudata,** DC. Stem mostly simple, virgate; lowest leaves spatulate-lanceolate, obscurely 3-nerved; the others scattered, linear. (Chrysocoma nudata, *Michx.*) — Var. VIRGATA. Lowest leaves linear-spatulate, 1-nerved; the others narrow-linear or filiform; heads larger. — Low pine barrens, Florida, and northward. Sept. — Stem 2° high.

22. ISOPAPPUS, Torr. & Gray.

Heads several-flowered. Rays 5 – 12, pistillate. Involucre cylindrical-campanulate; the scales lanceolate-subulate, imbricated in 2 – 3 rows, appressed. Receptacle alveolate. Achenia terete, silky. Pappus a single row of nearly equal capillary bristles. — Biennials. Stems paniculate. Leaves alternate, narrow. Heads scattered, on slender peduncles. Rays yellow.

1. **I. divaricatus,** Torr. & Gray. Hispid and glandular; stem erect, the slender branches spreading; leaves linear-lanceolate, sparingly toothed; involucre soft-hairy; rays 5 – 8. (Chrysopsis divaricata, *Nutt.*) — Sandy fields and woods, Florida, Georgia, and westward. Sept. — Stem 1° – 4° high. Panicle large. Heads 15 – 20-flowered.

23. HETEROTHECA, Cass.

Heads many-flowered. Rays pistillate. Scales of the involucre imbricated in few rows, linear. Receptacle alveolate, bristly. Achenia of the rays oval, destitute of pappus, those of the disk-flowers obovate, compressed, hairy, with a double pappus; the outer one short and chaffy, the inner bristly. — Biennial rough-hairy branching herbs, with irregularly toothed or entire alternate leaves, and corymbose-panicled heads of yellow flowers.

1. **H. scabra,** DC. Leaves oblong, toothed, commonly sessile or clasping; the lowest petioled, obtuse or somewhat cordate at the base; involucre thick, shorter than the brownish inner pappus. (Chrysopsis scabra, *Nutt.*) — Dry sandy places along the coast, South Carolina, and westward. Sept. — Stem rigid, 1° – 2° high. Leaves 1′ – 2′ long.

24. CHRYSOPSIS, Nutt.

Pappus of the ray and disk-flowers alike, double; the exterior row chaffy, or of chaffy bristles, the interior longer, capillary; otherwise like Heterotheca. —

Biennial or perennial hairy or silky herbs, with linear or oblong mostly entire leaves. Heads mostly corymbed. Flowers yellow.

* *Leaves narrow, nerved, entire: achenia oblong-linear, narrowed at each end, pubescent: perennials.*

1. **C. graminifolia,** Nutt. Stem leafy, white with appressed silky shining hairs, as also the linear leaves; heads numerous, rather small, on slender and more or less glandular peduncles; involucre top-shaped, the linear scales glandular. (C. argentea, *Nutt.*) — Sandy pine barrens, common. Sept. — Stem 1°–2° high. Lowest leaves 4′–8′ long.

2. **C. oligantha,** Chapm. Stem nearly naked and glandular above, the lower part, like the linear or lanceolate leaves, silky with appressed shining hairs; heads 1–4, on long erect glandular peduncles, rather large; involucre bell-shaped, the scales glandular-pubescent. — Low pine-barrens, Florida. April and May. — Stem 1° high. Stem-leaves clasping; those of the root elongated.

3. **C. pinifolia,** Ell. Smooth; stem rigid; leaves linear, crowded, rigid; corymb large; scales of the involucre woolly at the summit. — High sand-hills in the Western districts of Georgia, *Elliott.* — Stem 1½°–2° high. Stem-leaves 4′–6′ long, the uppermost filiform. Heads large. Exterior pappus somewhat chaffy.

* * *Leaves veiny, oblong or lanceolate; the lowest narrowed at the base, the upper sessile: achenia obovate, compressed.*

4. **C. Mariana,** Nutt. Perennial; stem simple, covered with loose silky deciduous hairs; lowest leaves spatulate-oblong, entire or slightly serrate; the upper ones lanceolate, sessile, entire; corymb small, mostly simple and umbellate, cone-like in the bud; peduncles and involucre glandular. — Sandy pine-barrens, Florida, and northward. Sept. — Stem 1°–2° high.

5. **C. trichophylla,** Nutt. Biennial; stem very leafy, mostly branching, villous with loose silky hairs; leaves oblong or lanceolate, the earliest ones crowded, obtuse and densely villous, the upper mostly acute and often smoothish; corymb large, compound; peduncles and involucre smoothish. — Var. HYSSOPIFOLIA (C. hyssopifolia, *Nutt.*) has narrow-linear and smooth leaves, except the tuft at the base. — Dry pine barrens, Florida to North Carolina. Sept. — Stem 2°–3° high, commonly ascending. Leaves 1′–2′ long.

6. **C. gossypina,** Nutt. Biennial, densely villous and hoary throughout; leaves oblong, obtuse, entire; the lowest spatulate, the upper sessile; corymb simple. (C. dentata, *Ell.*, leaves larger, the lowest sinuate-toothed.) — Dry sandy soil, Florida, and northward. Sept. — Stem 1°–2° high.

7. **C. scabrella,** Torr. & Gray. Pulverulent-scabrous throughout; stem stout, corymbosely branched above; leaves oblong-lanceolate, mucronulate, entire, equally somewhat glandular-scabrous on both sides, sessile, the lower ones narrowed at the base; heads numerous, in a compound corymb; peduncles and lanceolate obtuse scales of the involucre puberulent-glandular. — Pine woods, Florida. Sept. and Oct. — Stem 2° high.

8. **C. villosa,** Nutt. Rough-hairy and somewhat hoary throughout; stem rigid, very leafy; leaves lanceolate, acute, entire or sparingly serrate; the upper ones sessile, the lowest narrowed into a petiole; heads large, in a simple corymb. — Dry soil, Alabama, and westward. Sept. — Stem 1° – 2° high. Leaves 1′ long, fringed near the base.

9. **C. decumbens,** n. sp. Stems decumbent, simple, silky-villous; leaves villous, lanceolate-oblong, obtuse, entire, sessile, leafy in the axils; the lowest spatulate-oblong, clustered; heads large, in a loose corymbose panicle; the peduncles and involucre glandular-pubescent; rays about 25, showy; achenia hairy, furrowed; exterior pappus bristly. — Sandy shores on St. Vincent's Island, West Florida. Oct. and Nov. ② — Stems 2° – 4° long. Upper leaves ½′ – 1′ long, the lowest 3′ – 4′. Heads largest of all.

25. INULA, L. ELECAMPANE.

Heads many-flowered. Rays pistillate. Scales of the involucre imbricated in several rows. Receptacle flat or convex, naked. Anthers bicaudate at the base. Pappus single, of capillary slightly scabrous bristles. — Perennial herbs. Flowers yellow.

1. **I. Helenium,** L. Stem stout; leaves large, ovate, denticulate, tomentose beneath; the lowest ones petioled, the upper clasping; heads very large, somewhat corymbose; outer scales of the involucre broadly ovate, leafy; rays numerous, narrow; achenia 4-sided, smooth. — Mountains of North Carolina. Introduced.

26. CONYZA, L.

Heads many-flowered; the exterior flowers pistillate, fertile, in several rows; the corolla filiform, 2 – 3-toothed; a few of the central flowers staminate, with a tubular, 5-toothed corolla. Scales of the involucre in several rows. Receptacle punctate. Pappus a single row of capillary bristles. — Branching herbs, with toothed-lobed leaves, and heads of yellow flowers in corymbs or panicles.

1. **C. ambigua,** DC. Rough-hairy; lower leaves oblong-lanceolate, lobed, the upper entire, linear; heads panicled. (C. sinuata, *Ell.*) — Around Charleston. Introduced. April – July. — Stem 2° high.

27. BACCHARIS, L.

Heads dicœcious, many-flowered; the flowers all tubular. Corolla of the sterile flowers 5-cleft; of the fertile ones filiform, nearly entire, without anthers; style exserted. Scales of the oblong or hemispherical involucre imbricated in several rows. Receptacle naked or somewhat chaffy. Achenia ribbed. Pappus of the sterile flowers capillary, in a single row, as long as the involucre; of the fertile flowers in 1 – several rows, commonly much longer than the involucre. — Smooth and resinous shrubs. Leaves alternate. Flowers white.

1. **B. halimifolia,** L. Branches angled; leaves obovate, or oblong-obovate, toothed above the middle, the uppermost lanceolate, entire; heads pedun-

cled, the terminal ones clustered; pappus of the fertile flowers 3–4 times as long as the involucre. — Low ground, near the coast, Florida and northward. Sept. and Oct. — Shrub 2°–12° high.

2. **B. glomeruliflora,** Pers. Branches angled; leaves wedge-obovate, coarsely toothed, rigid; the uppermost obovate, entire; heads very numerous, in dense sessile axillary clusters; pappus of the fertile flowers twice as long as the involucre. (B. sessiliflora, *Michx.*) — Swamps along the coast, Florida to North Carolina. November. — Shrub 6°–12° high.

3. **B. angustifolia,** Michx. Branches numerous, angled; leaves linear, entire; heads single, or 2–4 in a terminal cluster; achenia smooth. — Saline marshes, Florida to North Carolina. Oct. — Shrub 4°–8° high. Heads small.

28. PLUCHEA, Cass.

Heads many-flowered; the central flowers mostly perfect, but sterile, with the corolla dilated and 5-cleft; the others pistillate, slender, slightly toothed. Anthers bicaudate. Scales of the involucre imbricated. Receptacle flat, mostly naked. Achenia grooved or angled. Pappus a single row of capillary slightly scabrous bristles. — Odorous mostly pubescent and glandular herbs, with alternate ovate or oblong serrate leaves. Heads of purplish flowers corymbose.

1. **P. bifrons,** DC. Stem simple, or sparingly branched; leaves oblong, acute, denticulate, strongly reticulated and rugose, cordate and clasping; heads clustered; involucre pubescent and viscid. (Conyza bifrons, *Ell.*) — Margins of pine-barren ponds, Florida to North Carolina. September. — Stem 1°–2° high. Flowers pale purple or white.

2. **P. fœtida,** DC. Minutely pubescent and glandular; leaves large, membranaceous, ovate-lanceolate, acuminate, serrate, tapering into a petiole; corymbs axillary and terminal; heads rather small, numerous, on slender pedicels; involucre smoothish, often purplish. (Conyza Marylandica, *Ell.?*) — Damp soil, Florida, and northward. September. — Stem 2°–5° high. Leaves 5′–8′ long, resinous-dotted. Flowers purple.

3. **P. camphorata,** DC. Minutely pubescent and glandular-viscid; leaves ovate-lanceolate or oblong-ovate, acute, denticulate, nearly sessile; heads rather large, in a dense corymb, on short and stout pedicels; scales of the involucre pubescent, the inner ones long-acuminate. — Salt marshes, Florida to North Carolina. September. — Stem 1°–2° high; the branches few and erect. Leaves 2′–3′ long. Flowers light purple.

4. **P. purpurascens,** DC. Tomentose and glandular; leaves ovate-lanceolate, acute or acuminate, sharply and somewhat crosely serrate, on slender petioles; heads rather small, on slender pedicels, loosely corymbose; scales of the involucre pubescent, the inner ones lanceolate, acute. — Swamps and low ground, Florida. September. — Stem 1°–2° high, with numerous spreading branches. Leaves 2′–4′ long. Flowers bluish-purple.

29. PTEROCAULON, Ell.

Heads and flowers chiefly as in Pluchea. Scales of the involucre lanceolate, imbricated in several rows, caducous. Receptacle minutely hairy. Achenia angled, pubescent. Pappus of numerous equal capillary bristles, longer than the involucre. — Perennial herbs. Leaves lanceolate, densely tomentose and hoary beneath, the margins broadly decurrent on the stem. Heads compactly spiked.

1. **P. pycnostachyum,** Ell. Stem rarely branched, 1° – 2° high; leaves wavy, smooth above; spike thick, woolly; flowers white. — Damp pine barrens, Florida to North Carolina. June and July.

TRIBE IV. SENECIONIDEÆ. *Heads discoid or radiate: branches of the style, in the perfect flowers, linear, convex externally, hairy or brush-shaped at the apex, and truncate, or produced into a conical or hispid appendage; the stigmatic lines terminating at the appendage, not confluent.*

30. POLYMNIA, L.

Heads many-flowered; the rays pistillate, in a single row; those of the disk tubular, 5-toothed, sterile. Scales of the involucre in two rows; the outer leafy, spreading; the inner smaller, membranaceous, clasping the obovoid fertile achenia. Receptacle chaffy. Pappus none. — Coarse branching perennial herbs, with angular or lobed leaves, and heads of yellow flowers in corymbose panicles.

1. **P. Canadensis,** L. Viscid-pubescent; lowest leaves opposite, petioled, pinnatifid; the upper alternate, angled or lobed; outer scales of the involucre acuminate, hairy and viscid; rays shorter than the involucre. — Mountains of North Carolina. July and August. — Stem 2° – 5° high. Heads small. Rays pale yellow.

2. **P. Uvedalia,** L. Stem smooth, or rough-pubescent; leaves broadly ovate, 3 – 5-lobed, coarsely toothed, rough above, pubescent beneath, abruptly contracted into a sinuate-winged petiole; outer scales of the involucre ciliate, obtuse; rays much longer than the involucre. — Rich soil, Florida, and northward. July and August. — Stem 3° – 6° high. Rays bright yellow.

31. CHRYSOGONUM, L.

Heads many-flowered; the rays 5, pistillate. Disk-flowers tubular, 5-toothed, sterile. Scales of the involucre in 2 rows; the exterior oblong, leafy; the interior roundish, clasping the oval compressed 4-angled fertile achenia. Receptacle flat, chaffy. Pappus a slightly lobed cup-shaped crown, divided on the inside to the base. — A low hairy stoloniferous perennial herb, with oval or spatulate-oblong opposite crenate leaves, and single heads of yellow flowers borne on a long peduncle.

1. **C. Virginianum,** L. — Dry open woods, Florida to North Carolina. February – April. — Plant at first simple, producing from a tuft of radical leaves a single peduncled head, afterward stoloniferous and branching.

32. SILPHIUM, L.

Heads many-flowered; the rays numerous, pistillate, fertile, in a single row. Disk-flowers cylindrical, sterile; the style undivided. Scales of the involucre leafy, imbricated in several rows; the innermost smallest, chaff-like. Receptacle small, with linear acutish chaff. Fertile achenia in 3–4 rows, round or obovate, flat, broadly winged, 2-toothed or emarginate at the apex; the sterile ones slender. Pappus none, or represented by the two teeth of the achenia. — Tall resinous herbs, with alternate opposite or whorled leaves, and large heads of yellow flowers in corymbose panicles.

* *Stems terete, nearly naked: leaves alternate; the lowest large, serrate or variously lobed, long-petioled; the others small and scattered.*

1. **S. laciniatum,** L. Stem hispid or smooth; leaves very rough or hispid, on clasping petioles, pinnately parted; the divisions oblong or lanceolate, acute, lobed or toothed; heads large, spicate or racemose; scales of the involucre ovate, tapering into a long and spreading point, ciliate; achenia round-obovate, emarginate. — Varies with the more numerous sessile and clasping leaves less deeply parted. (S. gummiferum, *Ell.*) — Prairies of Alabama, and westward. July and August. — Stem 6°–8° high. Lowest leaves 1°–2° long. Heads 1½′–2′ in diameter.

2. **S. terebinthinaceum,** L. Stem smooth, naked above; leaves rough-hairy, undivided, cordate-oval or oblong, coarsely serrate, on slender petioles; heads small, loosely panicled; scales of the involucre oval or obovate, obtuse, smooth; achenia obovate, emarginate or 2-toothed. (S. pinnatifidum, *Ell.*, leaves pinnatifid.) — Open woods in the western districts of Georgia, and westward. July–Sept. — Stem 4°–8° high. Radical leaves 2° long. Heads 1′ wide.

3. **S. compositum,** Michx. Smooth; leaves cordate-ovate or reniform, angularly toothed or variously lobed, long-petioled; heads small, corymbosely panicled; scales of the involucre obovate or oblong, obtuse; achenia roundish, deeply emarginate; rays 6–10. (S. terebinthinaceum, *Ell.*, leaves reniform, angularly toothed or lobed.) — Var. Michauxii, Torr. & Gray. Leaves deeply pinnatifid or ternately divided; the divisions lobed or toothed. — Var. ovatifolium, Torr. & Gray. Leaves ovate, angularly toothed. — Sandy open woods, Florida to North Carolina. July–Sept. — Stem 3°–6° high. Leaves 6′–12′ long. Heads ½′ in diameter.

* * *Stems leafy: leaves undivided, alternate, opposite, or whorled.*
\+ *Stems terete.*

4. **S. trifoliatum,** L. Stem smooth; leaves rough, lanceolate, slightly serrate, on short bristly petioles; the upper ones alternate or opposite; the lower 3–4 in a whorl; heads small, loosely panicled; scales of the involucre ovate or oval, fringed on the margins; achenia oblong-obovate, 2-toothed. (S. ternatum and S. atropurpureum, *Willd.*) — Open woods along the mountains of Georgia, and northward. July–Sept. — Stem 4°–6° high. Leaves 4′–6′ long.

5. **S. Asteriscus,** L. Stem smooth or hirsute; leaves rough, opposite or alternate, or the lower ones sometimes 3 in a whorl, lanceolate or oblong, toothed,

on short hirsute petioles; the upper ones sessile and commonly entire; heads somewhat corymbose, rather large; exterior scales of the involucre ovate, acute, short-ciliate; the interior oblong, obtuse; achenia broadly obovate, 2-toothed. — Var. DENTATUM. Lower leaves on rather long petioles, sometimes incisely toothed; achenia slightly emarginate at the apex. (S. dentatum, *Ell.*) — Dry open woods, Florida to North Carolina. July – Sept. — Stem 2° – 4° high. Leaves 3′ – 5′ long. Rays showy.

6. **S. lævigatum,** Ell. Smooth; leaves thick, lanceolate-oblong, acute at each end, opposite, coarsely serrate, on short petioles; the upper nearly sessile; heads small, loosely corymbose; scales of the involucre ovate, obtuse, spreading; achenia oval-obovate, narrowly winged, emarginate and slightly 2-toothed at the apex. — Western districts of Georgia and Alabama. July – Sept. — Stem 2° – 3° high. Lowest leaves 6′ – 8′ long.

7. **S. scaberrimum,** Ell. Stem rough-hairy; leaves mostly opposite, ovate, acute, serrate, rigid, very rough on both sides, on short petioles; heads corymbose; scales of the involucre ovate, ciliate; achenia nearly orbicular, broadly winged, deeply notched at the apex. — Western districts of Georgia and Alabama. August and Sept. — Stem stout, 3° – 4° high, becoming smoothish. Leaves 3′ – 4′ long. Heads larger than in the last.

+ + Stems square.

8. **S. perfoliatum,** L. Stem and branches smooth or hairy; leaves large, opposite, ovate or ovate-oblong, coarsely toothed, rough on both sides, or pubescent or hairy beneath, their bases, or winged petioles, united; the uppermost commonly entire, simply serrate; corymb trichotomous; the central heads long-peduncled; scales of the involucre ovate, obtuse; achenia broadly obovate, emarginate. (S. connatum, *L.* S. integrifolium, *Ell.?*) — Banks of streams along the mountains of Georgia, and northward. July – Sept. — Stem 4° – 6° high. Leaves 6′ – 12′ long. Heads large.

33. BERLANDIERA, DC.

Heads many-flowered. Ray-flowers few, pistillate; those of the disk tubular, 5-toothed, sterile. Scales of the involucre in three rows, the innermost largest, membranaceous, adherent to the fertile achenia. Receptacle chaffy; the chaff dilated upward, obtuse, hooded, partly embracing the sterile achenia; the inner ones gradually narrower. Fertile achenia in a single row, obovate, flattened, wingless, pubescent on the inner face, the apex entire. — Perennial downy or hoary herbs, with alternate leaves, solitary or corymbose heads, and yellow rays.

1. **B. tomentosa,** Torr. & Gray. Stem leafy, hoary-tomentose; leaves oblong-ovate, crenate, hoary beneath, closely pubescent above; the lowest tapering into a petiole; the upper cordate, sessile; heads at length numerous, corymbose-panicled. (Silphium pumilum, *Michx.*) — Dry pine barrens, Florida to North Carolina, and westward. June – August. — Stem 1° – 3° high. Leaves 2′ – 3′ long.

2. **B. subacaulis,** Nutt. Rough-pubescent and somewhat hoary; leaves chiefly radical, clustered, sinuate-pinnatifid; heads solitary on the peduncle-like stem, or few on the peduncle-like branches of the short and nearly leafless stem. — East Florida and Georgia. May– August. — Peduncle 6′ – 8′ long. Leaves 3′ long.

34. PARTHENIUM, L.

Heads many-flowered; the ray-flowers 5, in a single row, short, obcordate, pistillate; those of the disk tubular, 5-toothed, sterile. Anthers slightly united. Scales of the involucre in two rows, ovate or roundish. Receptacle conical, chaffy; the chaff dilated upward. Achenia smooth, compressed, thick-margined. Pappus of two awn-like or roundish scales. — Herbs. Leaves alternate. Flowers white.

1. **P. integrifolium,** L. Perennial; stem erect, simple, rough; leaves undivided, ovate or oblong-ovate, serrate; the lowest narrowed into a long petiole; panicle dense, corymbose; involucre hoary; pappus minute, awn-like. — Dry soil among the mountains, Alabama, and northward. August. — Stem 1° – 2° high. Lowest leaves 4′ – 6′ long. Rays conspicuous.

2. **P. Hysterophorus,** L. Annual, pubescent; stem diffuse; leaves pinnatifid, with linear toothed lobes; heads loosely panicled; scales of the pappus oval. — Waste places, East and South Florida, and westward.

35. IVA, L.

Heads few- or many-flowered; the flowers all tubular; the marginal ones (1 – 5) with a short corolla, pistillate and fertile; the central ones 5-toothed, sterile. Anthers nearly distinct. Scales of the involucre 3 – 5, in a single row, oval or obovate, distinct or partly united, or 6 – 9 and imbricated. Chaff of the small receptacle linear or spatulate. Achenia biconvex, obovate. Pappus none. — Branching herbs or shrubs, with opposite or (the upper) alternate mostly fleshy leaves, and small axillary nodding heads of whitish flowers.

* *Scales of the involucre* 3 – 5, *in a single row.*

1. **I. frutescens,** L. Shrubby; leaves lanceolate or oblong, sharply toothed-serrate, 3-ribbed, smoothish; scales of the involucre 5, orbicular; fertile flowers 5. — Saline marshes, Florida, and northward. Aug. and Sept. — Shrub 4° – 8° high.

2. **I. microcephala,** Nutt. Annual, rough with rigid appressed hairs; stem slender, much branched; leaves narrow-linear, entire; heads minute, 6 – 12-flowered; scales of the involucre 4 – 5, obovate, ciliate; fertile flowers 1 – 3. — Dry barren soil, Florida to South Carolina. Aug. and Sept. — Stem 1° – 2° high.

* * *Scales of the involucre* 6 – 9, *imbricated in* 2 – 4 *rows.*

3. **I. imbricata,** Walt. Somewhat shrubby, smooth; leaves fleshy, lanceolate, the lower ones slightly serrate and 3-ribbed, the upper alternate and entire; heads many-flowered; outer scales of the involucre orbicular; the inner obovate,

toothed-margined; fertile flowers 2 – 4, the short corolla 5-parted. — Varies with smaller and fewer-flowered heads, and the corolla of the fertile flower truncate. — Drifting sands along the coast, Florida to North Carolina. Aug. and Sept. — Stem 1° – 2° high. Leaves 1′ long.

36. AMBROSIA, Tourn.

Heads monœcious, in racemes or spikes; the upper ones sterile, nodding; the lower pistillate and fertile. Involucre of the sterile flowers hemispherical, composed of 7 – 12 united scales, 5 – 20-flowered. Receptacle naked or with slender chaff. Corolla 5-toothed. Involucre of the fertile flowers 1-flowered, ovoid or turbinate, entire, closed, pointed, commonly with a row of tubercles or spines near the apex. Corolla and stamens none. Achenia globose or ovoid. Pappus none. — Herbs. Leaves mostly pinnately lobed. Fertile flowers single or clustered at the base of the sterile spike, or in the axils of the upper leaves, bracted. Flowers whitish.

* *Leaves undivided or 3 – 5-lobed, opposite: receptacle naked.*

1. **A. trifida,** L. Stem tall (6° – 10°), 4-sided, rough-hairy; leaves rough, palmately 3 – 5-lobed, with the lobes ovate-lanceolate and serrate, or all undivided; fruit obovate, 6-toothed around the base of the conically beaked apex, clustered. (A. integrifolia, *Muhl.*) — River-banks and rich soil, Florida and northward. Aug. and Sept.

* *Leaves pinnately lobed; the upper ones mostly alternate: receptacle commonly chaffy.*

2. **A. crithmifolia,** DC. Stem prostrate and shrubby at the base; the branches velvety pubescent; leaves bipinnatifid, thickish, softly pubescent; spikes few, the terminal one elongated; fruit downy, unarmed. — Sandy shores at Key West, forming large clusters.

3. **A. artemisiæfolia,** L. Annual, erect, hairy or smoothish; leaves bipinnatifid, with linear lobes; the upper often entire; spikes single or panicled; fertile flowers single, clustered, or sometimes spiked; fruit nearly globose, armed with six short teeth. (A. elatior, *L.* A. paniculata, *Michx.*, spines of the fruit obsolete.) — Cultivated ground, everywhere. July – Sept. — Stem 1° – 4° high.

4. **A. hispida,** Pursh. Hispid and hoary throughout; leaves bipinnatifid, with toothed lobes; racemes terminal, somewhat panicled. — South Carolina, *Catesby.* — Stem 1° high. Heads larger than in No. 1. (*)

37. XANTHIUM, Tourn. Cocklebur.

Heads monœcious, spiked; the upper ones many-flowered, sterile, with the scales of the involucre separate, in a single row; the receptacle oblong, chaffy, and the short corolla 5-toothed; the lower ones fertile, consisting of two pistillate flowers, enclosed in a 2-celled oblong closed involucre, which is armed externally with numerous hooked spines or bristles, and terminated by one or two stout beaks. Corolla filiform. Achenium oblong, solitary in each cell. — Coarse annual herbs. Leaves alternate, lobed and petioled.

1. **X. strumarium,** L. Stem spineless, rough, branched; leaves large, broadly cordate, 3 – 5-lobed; the lobes toothed, acute and rough on both sides; fruit oval, pointed by two straight and smooth beaks. — Var. ECHINATUM. Leaves obtuse, less strongly lobed; the incurved beaks and spines of the larger (1′) fruit bristly. — Cultivated fields and waste places, common. July – Sept. — Stem 1° – 4° high, often spotted.

2. **X. spinosum,** L. Stem armed with triple spines, much branched; leaves lanceolate, entire or 3-lobed, hoary-tomentose beneath; fruit pointed by a single beak. — Waste places around the larger seaports, and sparingly in the interior. Introduced. Aug. and Sept. — Stem 2° – 3° high.

38. ECLIPTA, L.

Heads many-flowered; the ray-flowers short, pistillate, in a single row; those of the disk tubular, 4-toothed, perfect. Scales of the involucre 10 – 12, in 2 rows. Receptacle flat, with bristly chaff. Achenia 3 – 4-angled, hairy at the apex. Pappus none. — Rough branching annuals, with opposite lanceolate leaves. Heads small, axillary, on peduncles of varying length. Flowers white.

1. **E. erecta, L.** Stem erect or diffuse, terete, tumid below the joints, sprinkled, like the leaves, with appressed rigid hairs; leaves oblong-lanceolate, acute, serrate, narrowed into a petiole; peduncles single or 2 – 3 together. (E. procumbens, and E. brachypoda, *Michx.*) — Wet places, Florida, and northward. Sept. and Oct. — Stem 6′ – 3° long.

2. **E. longifolia,** Schrad. Stem erect, rough-hairy; leaves lanceolate or oblong-lanceolate, acuminate, serrate, sessile and clasping; peduncles longer than the heads. — Wet places, Apalachicola, Florida. Sept. — Stem 1° – 2° high. Leaves 4′ – 6′ long.

39. BORRICHIA, Adans.

Heads many-flowered; ray-flowers pistillate, in a single row; those of the disk tubular, 5-toothed, perfect. Scales of the hemispherical involucre imbricated; the exterior ones leafy. Receptacle flat, with rigid persistent chaff. Achenia somewhat wedge-shaped, 3 – 4-angled. Pappus a 3 – 4-toothed border. — Fleshy maritime shrubs. Leaves opposite and slightly connate. Heads solitary, peduncled. Flowers yellow.

1. **B. arborescens,** DC. Smooth, or the young branches pubescent; leaves spatulate-lanceolate, abruptly pointed, entire; scales of the involucre as long as the disk; the inner ones and chaff of the receptacle obtuse. — Key West. Dec. — Shrub 5° – 10° high.

2. **B. frutescens,** DC. Branches and leaves hoary-tomentose; leaves varying from spatulate-linear to obovate-oblong, entire or toothed near the base; scales of the involucre shorter than the disk, the inner ones and chaff of the receptacle spine-pointed. (Buphthalmum frutescens, *L.*) — Saline marshes, Florida to North Carolina. June – Oct. — Stem 1° – 2° high.

40. MELANTHERA, Rohr.

Heads many-flowered; the flowers all tubular and perfect, 5-cleft. Scales of the involucre imbricated in 2 rows. Chaff of the convex receptacle rigid, persistent, partly sheathing the flowers. Achenia 4-angled, short, truncate at the apex. Pappus of 2 – several rough rigid deciduous awns or bristles. — Rough perennial herbs, with branching 3 – 4-angled stems, opposite undivided or 3-lobed serrate petioled leaves, and scattered heads of white flowers, on long peduncles. Anthers black.

1. **M. hastata,** Michx. Stem commonly spotted; leaves varying from lanceolate to ovate, entire, or more or less hastate-3-lobed, serrate; scales of the involucre lanceolate, acute; chaff of the receptacle spine-pointed. — Light rich soil, Florida to South Carolina. Aug. and Sept. — Stem 3° – 6° high.

2. **M. deltoidea,** Michx. Leaves deltoid-ovate, undivided; scales of the involucre ovate; chaff of the receptacle obtuse, mucronate. — South Florida.

41. ZINNIA, L.

Heads many-flowered; the ray-flowers pistillate; those of the disk perfect, tubular, with 5 velvety lobes. Scales of the involucre imbricated, oval or roundish, margined. Chaff of the conical receptacle clasping the disk-flowers. Ray-flowers oblong, rigid persistent. Achenia of the disk compressed, with a 1 – 2-awned pappus; those of the rays 3-angled, destitute of a pappus. — Annual herbs, with sessile entire 3-ribbed leaves, and solitary heads, on long inflated peduncles.

1. **Z. multiflora,** L. Stem erect, hairy, branching; leaves oblong-lanceolate; chaff of the receptacle obtuse; pappus of the disk-flowers 1-awned; rays red or purple. — Waste places, Florida to North Carolina. Introduced. July – Sept. — Stem 1° – 2° high. Rays sometimes fading into yellow.

42. HELIOPSIS, Pers.

Heads many-flowered; the ray-flowers pistillate; those of the disk tubular, perfect, 5-toothed. Scales of the involucre in 2 – 3 rows; the exterior longer, leafy. Chaff of the conical receptacle lanceolate, partly clasping the smooth 4-angled truncated achenia. Pappus none. — Perennial herbs with the habit of Helianthus. Rays yellow.

1. **H. lævis,** Pers. Smooth; stem slender, branching; leaves ovate or ovate-lanceolate, acute or acuminate, sharply serrate, 3-ribbed at the base, on slender petioles; peduncles elongated; scales of the involucre obtuse; rays deciduous. — Dry open woods, Florida, and northward. Aug. and Sept. — Stem 2° – 3° high. Leaves 2′ – 3′ long, sometimes scabrous.

43. TETRAGONOTHECA, Dill.

Heads many-flowered; the ray-flowers (6 – 9) pistillate; those of the disk tubular, 5-toothed, perfect. Involucre double, 4-sided; the exterior of 4 ovate

leaves partly united below; the interior of about 8 small chaffy scales. Chaff of the conical receptacle lanceolate, acute. Achenia obovoid, nearly terete, truncated. Pappus none. — A low hairy and clammy perennial herb, with large sessile or connate, oval or oblong, coarsely toothed leaves, and large solitary heads of yellow flowers, on long peduncles.

1. **T. helianthoides,** L. — Dry sandy soil, Florida to North Carolina. July. — Stems several, stout, 1° – 1½° high. Leaves 4′ – 6′ long. Head 2′ in diameter.

44. ECHINACEA, Mœnch.

Heads many-flowered; the ray-flowers pistillate, but sterile, drooping; those of the disk tubular and perfect. Scales of the involucre lanceolate, imbricated in three or more rows, spreading. Receptacle at length conical. Chaff of the receptacle rigid, spine-pointed, longer than the disk-flowers. Achenia short, 4-sided, crowned with a cup-shaped toothed pappus. — Perennial sparingly branched herbs, with alternate undivided 3 – 5-ribbed leaves, and large heads terminating the peduncle-like summit of the stem or branches. Rays red, purple, or white.

* *Rays elongated, purple or white.*

1. **E. purpurea,** Mœnch. Stem simple, or with peduncle-like branches, smooth or hairy; leaves ovate-lanceolate, serrate, rough; the lowest ones ovate, on long petioles; scales of the involucre imbricated in 3 – 5 rows, ciliate; rays about 12, lanceolate, purple. — Varies with the stem and leaves smooth; rays strap-shaped, white. — Rich woods in the upper districts. June – August. — Stem 2° – 5° high. Rays 2′ – 3′ long.

2. **E. angustifolia,** DC. Hirsute; stem simple; leaves lanceolate, entire, 3-ribbed; the lowest tapering into a long petiole; scales of the involucre imbricated in 2 – 3 rows; rays 12 – 15, narrow, pale purple. — Prairies and low barrens, Alabama, and westward. May – July. — Stem 1° – 3° high. Lowest leaves ½° long.

* * *Rays short, dark red.*

3. **E. atrorubens,** Nutt. Smooth, or rough throughout with white appressed hairs; stem simple, furrowed; leaves rigid, entire, shining; the lowest linear-lanceolate, narrowed into a petiole, 3-ribbed; the upper few and remote, linear, sessile; scales of the involucre in three rows; rays about 9, wedge-shaped, shorter than the ovate dark purple disk; chaff of the receptacle short-cuspidate, about as long as the disk-flowers; pappus 4-toothed. — Low pine barrens, Georgia and Florida. June – August. — Stem 2° high. Lowest leaves ½° long. Heads ½′ in diameter. Plant turns black in drying.

45. RUDBECKIA, L.

Heads many-flowered; the ray-flowers neutral; those of the disk tubular, perfect. Scales of the involucre in about two rows, leafy, spreading. Receptacle conical or cylindrical; the chaff not rigid, and mostly shorter than the disk-flowers. Achenia smooth, angled, truncated. Pappus a narrow border, or none.

— Perennial or biennial herbs, with alternate simple or lobed leaves, and showy heads terminating the stem or branches. Rays yellow or party-colored. Disk dark purple or yellowish.

* *Disk ovate or globose.*

+ *Leaves undivided: stem simple or sparingly branched.*

1. **R. hirta,** L. Hirsute; stem and branches naked at the summit; leaves 3-ribbed, lanceolate or oblong, serrate, the upper ones sessile, the lowest narrowed into a petiole; disk roundish, purplish brown; chaff of the receptacle acute, hairy at the apex; appendages of the style subulate. — Dry soil, Florida to Mississippi, and northward. July and August. — Stem rigid, 1°–2° high. Rays longer or shorter than the involucre.

2. **R. fulgida,** Ait. Hairy; stem simple or sparingly branched, naked at the summit; leaves 3-ribbed, mostly serrate; the lowest oval or oblong, on slender petioles; the upper ones spatulate-oblong or lanceolate, slightly clasping; rays commonly longer than the involucre; disk roundish, dark purple; chaff of the receptacle smoothish, rather obtuse; appendages of the style short-conical. (R. discolor, *Ell.* R. spathulata, *Michx.*, a smoothish mountain form, with spatulate mostly entire leaves, and smaller heads.) — Dry soil, Florida, and northward. August and September. — Stem 1°–3° high. Rays often turning reddish at the base in withering.

3. **R. mollis,** Ell. Stem hirsute-villous, branching; leaves oblong, obscurely serrate, sessile and partly clasping, soft-tomentose on both sides; the lowest somewhat spatulate; scales of the involucre numerous, linear-lanceolate, villous, reflexed, half as long as the (12–20) rays; disk brownish; chaff of the receptacle rather obtuse, tomentose at the apex. — Western districts of Georgia. August–October. — Stem 2°–3° high.

4. **R. Heliopsidis,** Torr. & Gray. Rhizoma prostrate; stem pubescent, with few peduncle-like branches at the summit; leaves ovate or oval, slightly serrate, obtuse, smoothish, 5-ribbed, petioled; scales of the involucre oblong, shorter than the brownish-purple subglobose disk, and (10–12) oblong-linear rays; chaff of the receptacle obtuse, pubescent at the apex; achenia of the rays 3-angled, as large as those of the disk. — Pine barrens near Columbus, Georgia, and Alabama. August and September. — Stem 2° high.

+ + *Leaves divided: stem paniculately or corymbosely branched.*

5. **R. triloba,** L. Biennial, rough-hairy; stem much branched; lowest leaves long-petioled, ovate or oval, simple, or with two small lateral lobes, serrate; lower stem-leaves 3-lobed; the upper simple, sessile, often entire; heads small, numerous; scales of the involucre narrow-lanceolate, shorter than the rays; disk almost black; chaff of the receptacle awl-pointed, smooth, as long as the flowers. — Var. PINNATILOBA, Torr. & Gray, is smaller and more slender, and the lower stem leaves pinnately lobed. — Dry soil, West Florida and northward. August and September. — Stem 2°–5° high. Leaves sometimes all undivided. Rays about 8.

6. **R. laciniata,** L. Stem smooth, tall (4°–6°), branching; leaves rough; the lowest pinnately divided, the divisions lanceolate or oblong, lobed or

pinnatifid; the middle ones 3–5-parted; the uppermost often undivided, toothed; disk yellowish, ovate or conical; rays large, drooping; chaff of the receptacle truncate, pubescent at the apex, about as long as the 3-angled achenia. (R. digitata, *Mill.* R. lævigata, *Pursh.*) — Swamps, Florida, and northward. July and August. — Leaves large. Rays 1′–2′ long.

7. **R. heterophylla,** Torr. & Gray. Pubescent; stem corymbose above; leaves coarsely serrate, rough above, tomentose beneath; the lowest orbicular-cordate or 3–5-parted, on long petioles; the middle ones 3-lobed; the uppermost ovate, sessile and entire; disk globose, yellowish; rays drooping; chaff of the receptacle acute; achenia 3-sided. — Swamps, Middle Florida. August. — Stem 3°–4° high. Leaves and heads much smaller than in the preceding.

* * *Disk columnar, elongated: stems tall, simple.*

8. **R. maxima,** Nutt. Smooth; leaves large, membranaceous, oval or oblong, slightly toothed or entire, feather-veined, the lower ones petioled, the upper clasping; head solitary, long-peduncled; rays large, drooping. — Wet pine barrens, West Florida and westward. August. — Stem 4°–9° high. Lowest leaves 8′–12′ long. Rays 2′ long.

9. **R. nitida,** Nutt. Smooth and shining; stem tall, naked above; leaves rigid, oblong-lanceolate, slightly toothed or entire, 3–5-ribbed; the lowest long-petioled; the upper partly clasping, small; rays large, drooping; disk brown. — Borders of swampy thickets, Georgia, Florida, and westward. July. — Stem 3°–5° high. Lowest leaves 4′–6′ long.

* * * *Lower leaves opposite: disk ovate, yellow: chaff of the receptacle cuspidate, ribbed: achenia biconvex, striate, hairy, rounded at the apex: pappus none.*

10. **R.? Porteri,** Gray. Rough with short scattered hairs; stem paniculately branched; leaves lanceolate, entire, narrowed at each end, fringed at the base; exterior scales of the involucre linear, as long as the disk; the interior shorter, resembling the chaff of the receptacle; rays 7–9, longer than the disk. — Stone Mountain, Georgia. — Stem 2°–3° high.

46. LEPACHYS, Raf.

Scales of the involucre few and small. Chaff of the oblong or columnar receptacle truncate and thickened at the apex. Achenia flattened and margined. Pappus 2-toothed or none. Otherwise like Rudbeckia. — Perennials. Leaves pinnately divided. Rays large, drooping, yellow.

1. **L. pinnata,** Torr. & Gray. Rough with short appressed hairs; stem sparingly branched; divisions of the leaves 3–7, lanceolate, acute, serrate or entire; disk yellowish, oval or oblong, shorter than the rays; pappus obscurely 2-toothed. (Rudbeckia tomentosa, *Ell.*) — Dry soil, West Florida, Georgia, and westward. July–Sept. — Stem 3°–4° high. Rays 2′ long.

47. HELIANTHUS, L. Sunflower.

Heads many-flowered; the ray-flowers neutral; those of the disk tubular and perfect. Scales of the involucre imbricated in 3 or more rows, with or without

leafy spreading tips. Receptacle flat or convex, chaffy. Achenia 4-angled, usually compressed. Pappus of 2 (rarely 3 – 4) caducous chaffy scales or awns. — Annual or perennial herbs, with opposite or alternate, commonly 3-ribbed, undivided leaves. Heads solitary, terminating the stem or branches. Disk yellow or dark purple. Rays yellow.

* *Annual: disk dark purple: chaff of the receptacle 3-toothed: leaves on long and slender petioles: achenia pubescent.*

1. **H. debilis,** Nutt. Roughish; stem slender, decumbent, branching; leaves rarely opposite, deltoid-ovate, acuminate, wavy-serrulate; heads small; scales of the involucre narrowly lanceolate, slender-pointed; pappus 2-awned. — Shores of East Florida. — Stem 1° – 2° long. Rays 10 – 14.

2. **H. præcox,** Gray & Engelm. Rough with scattered rigid hairs, villous when young; stem erect, paniculately branched, somewhat spotted; leaves thin, coarsely serrate, acuminate, undulate, the lowest deltoid-ovate, cordate, opposite, the upper ones ovate-lanceolate; scales of the involucre lanceolate-subulate; rays 15 – 20. — Sandy shores, West Florida, and westward. July – Sept. — Stem 2° – 3° high.

* * *Perennial: disk dark purple.*

+ *Rays minute or wanting.*

3. **H. Radula,** Torr. & Gray. Stem simple, ascending, leafy and hirsute towards the base, naked and smoothish above; leaves thick, entire, rugose, hirsute, the 4 radical ones large, roundish or rhombic; spreading; the lower ones obovate, opposite; the uppermost small, linear; scales of the involucre oblong-ovate; rays mostly wanting; chaff of the receptacle acuminate. — Low sandy pine barrens, Georgia, Florida, and Alabama. Oct. — Stem 2° high. Heads rather large.

+ + *Rays conspicuous.*

4. **H. angustifolius,** L. Stem rough-hairy or smoothish, paniculately branched; leaves linear, elongated, entire, with the margins revolute; the lowest ones opposite; scales of the involucre lanceolate, acuminate; chaff of the receptacle 3-toothed; rays 12 – 18, showy. — Varies, with broader leaves, and the disk at first yellow. — Low ground, Florida to Mississippi, and northward, common. Oct. — Stem 2° – 6° high. Leaves 3′ – 6′ long.

5. **H. heterophyllus,** Nutt. Hirsute or hispid; stem slender, mostly simple, naked above; leaves opposite, thick, entire; the lower ones lanceolate or oblong, tapering into a petiole; the others linear, remote; scales of the involucre lanceolate, acuminate, ciliate; chaff of the receptacle 3-toothed, the middle tooth cuspidate; rays 15 – 20, elongated. — Pine-barren swamps, Florida to North Carolina, and westward. Sept. and Oct. — Stem 2° – 4° high. Lowest leaves 2′ – 6′ long. Rays 1½′ long.

6. **H. atrorubens,** L. Hirsute or hispid; stem sparingly branched and somewhat naked above; leaves opposite, oval, serrate, the lowest large and long-petioled; the upper small, sessile, distant; scales of the involucre oval or oblong, obtuse; chaff of the receptacle acute; rays about 12; achenia pubescent at the apex. (H. sparsifolius, *Ell.*) — Dry soil, Florida to North Carolina. Sept. and Oct. — Stem 2° – 5° high. Lowest leaves 4′ – 6′ long. Heads rather small.

7. **H. rigidus,** Desf. Stem leafy, stout, mostly simple, rough; leaves oblong-lanceolate, slightly serrate or entire, thick and rigid, very rough on both sides, narrowed into short connate petioles; scales of the involucre ovate, acute, appressed; chaff of the receptacle obtuse; rays 20 – 25. (H. scaberrimus, *Ell.*) — Western districts of Georgia, *Elliott*, and westward. Sept. — Stem 1° – 3° high. Heads showy.

** * * Perennial: disk yellow: heads large or middle-sized.*

8. **H. lætiflorus,** Pers. Stem stout, rough, branching; leaves oval-lanceolate, acuminate, serrate, rigid, very rough on both sides, on short petioles; the uppermost often alternate; heads solitary or corymbose, on naked peduncles; scales of the involucre ovate-lanceolate, acute, ciliate, appressed; chaff of the receptacle somewhat 3-toothed or entire; rays 12 – 16, elongated. (H. tricuspis, *Ell.*, with the leaves all nearly entire; chaff of the receptacle 3-toothed.) — Dry soil, in the Western districts of Georgia, and westward. Sept. — Stem 3° – 4° high. Leaves 5′ – 8′ long. Rays 1½′ long.

9. **H. occidentalis,** Riddell, var. **Dowellianus,** Torr. & Gray. Nearly smooth; stem branched above; leaves triple-nerved, rather thick, slightly dentate, on margined petioles, and with a short scattered pubescence; the lowest ones opposite, large, broadly ovate, subcordate, obtuse; the upper alternate, oblong-ovate; peduncles long and slender; scales of the involucre lanceolate, acuminate, slightly ciliate, shorter than the disk, appressed; rays 12 – 15. — Macon County, North Carolina, *Curtis*. Aug. and Sept. — Stem 4° – 5° high. Lower leaves 7′ – 8′ long, 5′ – 6′ wide. Rays 1′ long.

10. **H. mollis,** Lam. Villous or tomentose and somewhat hoary; stem mostly simple; leaves ovate or oblong-ovate, acute, slightly serrate, cordate and clasping; the upper ones often alternate; heads few, on short peduncles; scales of the involucre lanceolate, acute; chaff of the receptacle entire; rays 15 – 25. (H. pubescens, *Ell.*) — Dry open woods in the upper districts of Georgia, and westward. Sept. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Heads thick.

11. **H. giganteus,** L. Stem hirsute, rough, branching above; leaves lanceolate, acuminate, serrate, nearly sessile, rough above, paler and rough-hairy beneath, slightly 3-nerved at the base, all but the lowest ones alternate; scales of the involucre linear-lanceolate, spreading, hirsute; rays 15 – 20. — Low ground in the upper districts, and northward. Sept. — Stem 3° – 10° high. Leaves 2′ – 5′ long. Rays 1′ long.

12. **H. tomentosus,** Michx. Stem stout, hirsute, branching; leaves all alternate, or the lowest ones opposite, very rough above, tomentose beneath, slightly serrate; the lowest large (6′ – 12′), ovate, on short winged petioles; the upper ones oblong; heads large; scales of the involucre numerous, lanceolate, acuminate, villous, spreading; rays 15 – 20. (H. spathulatus, *Ell.*, with the leaves all opposite, scales of the involucre shorter.) — Open woods, and margins of fields, Florida to North Carolina. Sept. — Stem 4° – 8° high. Rays 1′ – 1½′ long.

13. **H. doronicoides,** Lam. Stem tall, branched, smooth below, hirsute above; leaves opposite, ovate or ovate-lanceolate, acuminate, serrate, rough

above, pubescent beneath; the lower ones often slightly cordate, on short winged petioles; scales of the involucre linear-lanceolate, hirsute, about as long as the disk; rays 12 – 15. — Southern States, *Torr. & Gray*, and westward. Sept. — Stem 5° – 8° high. Lowest leaves 6′ – 12′ long. Heads large. Rays 1½′ long.

14. **H. strumosus,** L. Stem simple or branched, rough above, smooth below; leaves varying from lanceolate to ovate-lanceolate, acuminate, slightly serrate, short-petioled, very rough above, paler and smooth, or roughish, or sometimes softly pubescent beneath; scales of the involucre lanceolate, acuminate, as long as the disk, spreading; rays 8 – 10. (H. mollis, *Ell.*) — Dry soil, common. Sept. — Stem 2° – 4° high, sometimes glaucous. Leaves 3′ – 4′ long.

15. **H. decapetalus,** L. Stem branched, smooth below, rough above; leaves thin, opposite, ovate, acuminate, coarsely serrate, rough on the upper surface, smooth or roughish beneath, abruptly short-petioled; scales of the involucre lanceolate-linear, spreading; the exterior ones longer than the disk; rays 8 – 10. (H. strumosus and H. tenuifolius, *Ell.*) — Mountains of Georgia, and northward. Sept. — Stem 2° – 5° high. Leaves 3′ – 6′ long, obtuse at the base.

16. **H. hirsutus,** Raf. Stem hirsute, simple or forking at the summit; leaves opposite, short-petioled, tapering from the broad and rounded, sometimes slightly cordate base, acuminate, serrate, very rough above, paler and rough-hairy beneath; scales of the involucre ovate-lanceolate, acuminate, appressed, as long as the disk; rays about 12. (H. diversifolius, *Ell.*, with the leaves broader; the upper oval, and nearly entire.) — Dry soil in the upper districts. Sept. — Stem 2° – 5° high. Leaves 3′ – 5′ long.

17. **H. divaricatus,** L. Stem smooth, simple, or corymbosely branched at the summit; leaves opposite, sessile, ovate-lanceolate, serrate, rounded or truncate at the base, very rough above, smooth or rough-pubescent beneath; heads few, on short peduncles; scales of the involucre lanceolate or linear-lanceolate, spreading, as long as the disk; rays 8 – 12. (H. truncatus, *Ell.*) — Dry woods, Florida, and northward. Sept. — Stem 2° – 3° high. Leaves 3′ – 5′ long.

* * * * *Perennial: disk yellow: heads small: leaves narrow.*

18. **H. microcephalus,** Torr. & Gray. Stem smooth, much branched; leaves opposite, or the upper ones alternate, lanceolate or ovate-lanceolate, acute, sparingly serrate, rough above, paler and tomentose beneath, on short petioles; heads numerous, on pubescent peduncles; scales of the involucre ovate-lanceolate, appressed; rays 5 – 8. (H. divaricatus, *Ell.*) — Dry woods, Florida, and northward. Sept. — Stem 3° – 5° high; the branches forking. Leaves 3′ – 10′ long.

19. **H. Schweinitzii,** Torr. & Gray. Stem hispid, branching above; leaves lanceolate, acuminate, sparingly serrate, nearly sessile, very rough above, hoary-tomentose beneath; the lower ones opposite, the upper alternate and entire; scales of the involucre lanceolate, acute, with spreading tips; rays about 8. — Upper districts of North Carolina, *Curtis.* — Stem 3° – 5° high. Leaves 3′ – 5′ long.

20. **H. lævigatus,** Torr. & Gray. Stem smooth and glaucous, the branches forking; leaves smooth on both sides, opposite, or the uppermost alternate, ob-

long-lanceolate, acute, entire or serrulate, obscurely 3-ribbed, nearly sessile; scales of the involucre ovate, acute, appressed with spreading tips; rays 6 – 8. — North Carolina, *Curtis*. — Stem 4° – 5° high. Heads twice as large as those of No. 18.

21. **H. longifolius,** Pursh. Very smooth throughout; stem slender, branching; leaves mostly opposite, linear-lanceolate, sessile, entire; the lowest tapering into slender petioles and sparingly serrate; heads few; scales of the involucre ovate-lanceolate, as long as the disk; rays about 10. — Damp rich soil in the Western districts of Georgia, *Elliott*. — Stem 3° – 4° high. Leaves 6′ – 8′ long. Rays small. — Resembles an aquatic Coreopsis.

H. ANNUUS, the common SUNFLOWER, and H. TUBEROSUS, the JERUSALEM ARTICHOKE, are commonly cultivated species.

48. HELIANTHELLA, Torr. & Gray.

Achenia 4-angled, compressed, slightly winged, crowned with a ciliate border, or the angles prolonged into persistent, often lacerated, chaffy scales; otherwise like Helianthus. — Slender perennial herbs, with narrow leaves, and showy heads of yellow flowers.

1. **H. grandiflora,** Torr. & Gray. Hirsute; stem simple; leaves alternate or opposite, lanceolate-linear, entire; scales of the involucre lanceolate, appressed; pappus of two obtuse lacerated scales. — East Florida. — Stem 3° – 4° high. Leaves 1′ – 2′ long. Rays nearly 2′ long.

2. **H. tenuifolia,** Torr. & Gray. Hirsute; stem simple, or corymbose at the summit; leaves narrow-linear, entire, the lower ones opposite or whorled; the upper alternate; scales of the involucre lanceolate-subulate, spreading; pappus of 2 – 4 acute awns. — Dry sandy pine barrens. West Florida. June and July. — Stem 1° – 2° high. Rays 1′ – 1½′ long.

49. ACTINOMERIS, Nutt.

Heads many-flowered; the ray-flowers 4 – 14, neutral, or wanting. Scales of the involucre in 1 – 3 rows, leafy. Receptacle convex or conical, chaffy; the chaff embracing the outer edge of the laterally compressed obovate mostly winged achenia. Pappus of two persistent awns (obsolete in No. 5). — Perennial herbs, with ovate or lanceolate serrate often decurrent leaves. Flowers yellow or white.

* *Stems tall, branching: pappus 2-awned.*

1. **A. squarrosa,** Nutt. Stem pubescent, winged above; leaves alternate or opposite, rough, ovate-lanceolate, acuminate at each end; heads corymbose; scales of the involucre in 2 rows, linear-spatulate, spreading; achenia broadly obovate, winged; awns of the pappus rigid, spreading; rays 4 – 12, yellow. — River-banks, Florida to North Carolina. Sept. — Stem 4° – 8° high. Lowest leaves 1° long.

2. **A. alba,** Torr. & Gray. Stem smooth, or pubescent and often slightly winged above; leaves alternate, rough, lanceolate; heads loosely corymbose;

scales of the involucre in a single row, lanceolate-subulate; achenia mostly broadly winged; awns of the pappus slender; flowers white; rays none. — Rich soil, in the lower districts, Georgia and South Carolina, and westward, rare. Sept. — Stem 4° – 8° high. Leaves 5′ – 8′ long.

3. **A. helianthoides,** Nutt. Stem hirsute, strongly winged; leaves alternate, ovate-lanceolate, sessile, rough-hairy above, downy and hoary beneath; heads few, corymbose; scales of the involucre in 2 – 3 rows, broadly lanceolate, appressed; rays 8 – 14, yellow; achenia slightly winged; awns bristle-like. — Near Louisville, Georgia, and westward. July. — Stem 2° – 3° high. Leaves 3′ long. Rays 1½′ long.

4. **A. nudicaulis,** Nutt. Hirsute; stem wingless, somewhat naked and corymbose above; leaves opposite, oblong, sessile, barely acute, the uppermost small and mostly alternate; heads corymbose; scales of the involucre short, in 2 – 3 rows; rays 7 – 12, yellow; achenia obovate-oblong, mostly wingless; awns short. (Helianthus ? aristatus, *Ell.*) — Dry sandy woods, Georgia, Alabama, and Florida. Aug. and Sept. — Stem 2° high. Leaves 2′ – 3′ long.

* * *Stems low, simple: pappus obsolete: rays none.*

5. **A. pauciflora,** Nutt. Stem wingless, simple, smooth below, naked and rough above; leaves opposite or alternate, lanceolate or elliptical, sessile, rigid, obtuse, strongly reticulate, rough with short rigid hairs; heads solitary or 2 – 3 together, terminal; scales of the involucre in 2 rows, lanceolate, appressed; flowers orange-yellow; the marginal ones abortive; achenia oblong-obovate, narrowly winged, with a cup-shaped disk; pappus wanting. — Low pine barrens near the coast, West Florida. June and July. — Stem 1° – 2° high. Leaves 2′ long. Involucre, chaff, and achenia dark brown.

50. COREOPSIS, L. Tickseed.

Heads many-flowered; the ray-flowers commonly 8, neutral, rarely wanting. Involucre double; each row of about 8 scales; the outer ones narrow and spreading; the inner membranaceous and appressed. Receptacle flat, chaffy. Chaff membranaceous, mostly deciduous with the achenia. Achenia compressed, often winged, not narrowed nor beaked at the apex, awnless, or with a pappus of two upwardly hispid or serrulate awns or scales. — Herbs. Leaves entire or pinnately divided. Heads solitary or corymbose. Disk dark purple or yellow. Rays yellow, rarely rose-color.

* *Rays none.*

1. **C. discoidea,** Torr. & Gray. Smooth; stem diffusely branched; leaves long-petioled, 3-parted, with ovate-lanceolate coarsely serrate divisions; the uppermost often simple; heads small, on short peduncles; exterior involucre foliaceous, longer than the heads; achenia narrowly wedge-shaped, hairy. — Swamps, North Carolina, and northward. July – Sept. — Stem 1° – 2° high.

* * *Rays entire, or emarginate at the apex, yellow.*

† *Leaves petioled: achenia narrowly wedge-shaped, 2-toothed or awned: scales of the involucre equal, the outer ones separate.*

2. **C. aurea,** Ait. Stem smooth, much branched; leaves smooth or slightly pubescent, 5 – 7-parted; the divisions oblong or lanceolate, serrate, toothed or

lobed, or all linear and entire; exterior scales of the involucre linear-spatulate; achenia smoothish, with two short triangular teeth. (C. mitis, *Michx.* C. arguta, *Pursh.*) — Swamps, Florida to North Carolina, and westward. Aug. – Oct. — Stem 2° – 4° high. Leaves polymorphous; the uppermost commonly undivided. Rays showy.

3. **C. trichosperma,** Michx. Smooth; stem somewhat 4-angled, branching; leaves pinnately 5 – 7-parted; the divisions lanceolate or linear, sharply serrate or toothed; the upper ones 3 – 5-cleft; exterior scales of the involucre linear, obtuse; achenia hispid above, crowned with two triangular hispid teeth. — Swamps, South Carolina, and northward. Sept. — Stem 1° – 2° high. Achenia twice as large as in the preceding.

+– +– *Leaves petioled: achenia elliptical or obovate, emarginate, awnless: exterior scales of the involucre shorter than the interior.*

4. **C. tripteris,** L. Stem smooth, branching; leaves smooth, or rough above; the upper and lower ones entire, the middle ones 3- (rarely 5-) parted, with the divisions lanceolate and entire; exterior scales of the involucre 5 – 6, obtuse, united at the base; achenia elliptical, smooth, incurved, narrowly winged. — Woods and margins of fields, Florida to North Carolina, and westward. Aug. and Sept. — Stem 3° – 6° high.

5. **C. latifolia,** Michx. Smooth or somewhat pubescent; stem tall; leaves undivided, ovate-oblong, acuminate, coarsely serrate, smooth above, paler beneath; heads small, corymbose; scales of the involucre 4 – 5 in each row; the exterior ones short, not united below; rays 4 – 5; achenia obovate-oblong, wingless. — High mountains of Georgia and North Carolina. Aug. — Lowest leaves 6′ long.

+– +– +– *Leaves sessile, 3-parted to the base, seemingly* 6 *in a whorl; the divisions entire or variously divided: scales of the involucre equal; the exterior ones linear-oblong, united below: achenia oblong, narrowly winged, naked or minutely* 2*-toothed at the apex.*

6. **C. senifolia,** Michx. Pubescent; stem 4-angled below, branching; divisions of the leaves oval-lanceolate, entire, the uppermost leaves often simple; disk yellow; achenia minutely 2-toothed. (C. stellata, *Nutt.*, with the stem more slender and leaves narrower.) — Dry sandy woods, Florida to North Carolina, and westward. Aug. — Stem 2° high. Leaves 1′ – 2′ long. Rays 6″ – 9″ long.

7. **C. delphinifolia,** Lam. Smooth or slightly pubescent; divisions of the leaves entire or 2 – 3- (the middle one sometimes 5-) parted, linear-lanceolate, rather rigid; disk brownish; achenia obovate-oblong, minutely 2-toothed. (C. verticillata, *Ehrh.*, *Ell.*) — Dry soil in the upper districts. Aug. and Sept. — Stem 1° – 2° high.

8. **C. verticillata,** L. Smooth; stem branching, slender; divisions of the pinnately or bipinnately divided leaves linear or filiform; disk yellow; achenia minutely 2-toothed at the apex. (C. tenuifolia, *Ell.*) — Low ground, in the upper districts. August. — Stem 1° – 3° high.

* * * *Rays 3 – 5-toothed or lobed.*

+– *Rays yellow : achenia orbicular, broadly winged, warty, and with a tubercle at each end on the inside, 2-toothed : scales of the involucre nearly equal : heads long-peduncled.*

9. **C. auriculata,** L. Stem erect, pubescent, commonly branched ; upper leaves oblong or ovate-lanceolate, mostly entire, nearly sessile ; the lower petioled, oval or roundish, entire, or with 2 – 4 small lateral lobes ; exterior scales of the involucre lanceolate ; rays 4-toothed. (C. pubescens, *Ell.*) — Rich shaded soil, West Florida to the mountains of North Carolina. June – Sept. — Stem 1° – 4° high. Leaves 1′ – 4′ long, variously divided on the same plant. Rays showy.

10. **C. grandiflora,** Nutt. Stem slender, smooth, ascending ; leaves elongated ; the lowest linear-spatulate, on long ciliate petioles ; the upper ternately or 1 – 2-pinnately parted, the divisions linear ; exterior scales of the involucre ovate-lanceolate ; rays large, 4 – 5-toothed. — Dry soil, Florida and Georgia, and westward. April – June. — Stem 8′ – 12′ high.

11. **C. lanceolata,** L. Smoothish ; stem short, ascending ; leaves undivided, thick ; the lowest spatulate-oblong on long ciliate petioles ; the upper lanceolate sessile ; exterior scales of the involucre ovate-lanceolate ; rays large, strongly 4 – 5-toothed. (C. crassifolia, *Ait.*, stem and leaves hairy or woolly.) — Dry rich soil, Florida to North Carolina. May and June. — Stem 6′ – 12′ long.

+– +– *Rays yellow : achenia nearly straight, oblong, 2-awned, the margins with a serrulate or pectinate wing (except No. 12) : exterior scales of the involucre shorter than the interior : disk dark purple.*

12. **C. Leavenworthii,** Torr. & Gray. Smooth ; stem dichotomous above ; leaves opposite, linear, entire, or with two lateral lobes ; rays 3-toothed ; achenia with a broad whitish entire wing, conspicuously 2-toothed. — Tampa Bay, East Florida. — Stem slender, 1° – 2° high. Lower leaves 3′ – 4′ long, 1″ wide. Rays 5″ – 6″ long.

13. **C. gladiata,** Walt. Smooth ; stem terete, naked above, simple, or with few peduncle-like branches ; leaves fleshy, alternate, entire, or rarely 3-lobed ; the lowest ones spatulate-oblong, on long petioles ; the upper small, linear ; heads large ; exterior scales of the involucre small and roundish ; rays showy, 4-toothed ; wings of the achenia pectinately toothed. — Low pine barrens, Florida to North Carolina, and westward. Sept. and Oct. — Stem 2° – 3° high. Lowest leaves 8′ – 10′ long. Rays wedge-shaped, 1′ long.

14. **C. angustifolia,** Ait. Smooth ; stem slender, 4-angled, dichotomously branched above ; leaves opposite or alternate, linear, obtuse, entire ; the lowest ones spatulate-lanceolate ; heads small, corymbose ; rays 3-toothed ; wings of the achenia pectinately toothed. — Pine-barren swamps, Florida to North Carolina, and westward. Sept. and Oct. — Stem 2° – 3° high. Leaves somewhat fleshy. Rays ½′ long.

15. **C. integrifolia,** Poir. Smooth ; stem terete, corymbosely branched above ; leaves opposite, petioled, entire, ovate or oblong, obtuse, the margins scarious and roughish ; heads few, on long peduncles ; exterior scales of the

involucre oblong-linear; rays wedge-shaped, palmately 3-lobed; ovary wingless, with hispid margins. — River-banks, South Carolina and Georgia. September. — Stem 2° – 3° high.

+ + + *Rays purple or rose-color.*

16. **C. nudata,** Nutt. Smooth; stem slender, forking above; leaves alternate, distant, terete, and rush-like; rays bright purple, 3-toothed; achenia with lacerated wings, 2-awned. — Pine-barren ponds, Florida and Georgia, near the coast. April. — Stem 2° high. Lowest leaves 1° long. Rays 1′ long.

17. **C. rosea,** Nutt. Smooth; stem low, branching; leaves opposite, linear; heads small; rays slightly 3-toothed; achenia wingless, unawned. — Swamps, Georgia, *Nuttall*, and northward. July and August. — Stem 8′ – 12′ high. Rays rose-color.

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18. **C. Œmleri,** Ell. Leaves broad-lanceolate, sessile, acute at each end, entire; peduncles axillary and terminal, dichotomously corymbose. — Collected near the junction of the Broad and Saluda Rivers by Mr. Œmler. *Elliott.* — Stem 2° – 3° high, angular, smooth. Leaves connate by a small membrane. Heads small. Rays about 8, entire. Achenia wedge-shaped, slightly 2-toothed and margined. (*)

51. COSMOS, Cav.

Scales of the involucre more or less united. Achenia terete or 4-angled, narrowed or beaked at the apex, and crowned with 2 – 4 downwardly barbed or hispid deciduous awns. Otherwise like Coreopsis. — Leaves opposite, pinnately divided. Disk yellow. Rays purplish.

1. **C. caudatus,** Kunth. Smooth; leaves bipinnately divided, with the divisions lanceolate and entire; achenia (1′ long) tapering into a very long rough beak, 2-awned; rays short, 3-cleft, rose-color. — Key West, Florida.

52. BIDENS, L. Beggar-ticks.

Chiefly like Coreopsis; but the exterior involucre often long and leaf-like; the achenia compressed, or 3 – 4-angled, (not narrowed at the apex,) and crowned with 2 – 4 persistent downwardly barbed or hispid awns. — Leaves serrate, or pinnately divided, opposite. Rays yellow or white, often wanting. Disk yellow.

* *Achenia flattened, narrowly wedge-shaped.*

1. **B. frondosa,** L. Stem tall, branched; leaves thin, long-petioled, pinnately 3 – 5-divided; the divisions ovate or ovate-lanceolate, acuminate, sharply serrate; heads discoid; exterior scales of the involucre large, leafy; achenia 2-awned. — Low ground, Florida and northward. July – Sept. ① — Stem 2° – 5° high. Margins of the achenia upwardly ciliate.

2. **B. connata,** Muhl. Stem low, branched; leaves oblong-lanceolate, acuminate, coarsely serrate, tapering and connate at the base, the lowest often 3-parted; heads discoid; exterior involucre leafy; achenia 2 – 4-awned, with downwardly hispid margins. — Western districts of Georgia and westward, in damp soil. July – Sept. ① — Stem 1° – 2° high.

3. **B. chrysanthemoides,** Michx. Smooth; stem erect or ascending; leaves undivided, oblong-lanceolate, obscurely serrate, connate; heads radiate, showy; achenia 2 – 4-awned. — Wet places, Florida to Mississippi, and northward. Sept. and Oct. ① — Stem thick, 1° – 2° high.

* * *Achenia 3 – 4-angled, linear: heads radiate: scales of the involucre nearly equal.*

4. **B. leucantha,** Willd. Stem low, 4-angled; leaves pinnately 3 – 5-divided; the divisions ovate or lanceolate, serrate; the lowest ones undivided; outer scales of the involucre obtuse, spreading; the inner ones acute; rays 5, white; achenia 2 – 4-awned. — South Florida. Oct. – Dec. — Stem 10′ – 15′ high.

5. **B. bipinnata,** L. Stem tall, 4-angled, much branched; leaves bipinnate, the divisions small, ovate or lanceolate, acute; heads small; rays 2 – 3, yellow; achenia 3 – 4-awned. — Cultivated grounds, common. Aug. and Sept. ① — Stem 2° – 5° high.

53. SPILANTHES, Jacq.

Heads many-flowered; the ray-flowers often wanting. Scales of the involucre in 2 rows, appressed, shorter than the disk. Receptacle convex or elongated; the membranaceous chaff embracing the flowers. Achenia of the disk compressed, mostly ciliate on the margins, naked at the apex, or with 1 – 3 bristly awns; those of the rays 3-angled. — Chiefly annual and acrid herbs, with opposite undivided leaves, and solitary heads of yellow flowers on long peduncles.

1. **S. repens,** Michx. Stem branching, slightly pubescent, decumbent and rooting at the base; leaves ovate-lanceolate or lanceolate, slightly serrate, narrowed into a petiole; heads small, ovoid, becoming oblong-conical; achenia awnless, not ciliate; rays 12. (Acmella repens, *Pers.*) — Muddy banks, Florida to South Carolina. Sept. and Oct. ☿? — Stem 6′ – 12′ long.

2. **S. Nuttallii,** Torr. & Gray. Villous-pubescent or smoothish; stem diffusely branched, ascending; leaves ovate or oblong, coarsely serrate, abruptly petioled; heads ovoid, at length oblong-conical; achenia awnless or with 1 – 2 minute awns, ciliate on the margins; rays 10 – 12. — Inundated places, East Florida. Aug. – Oct. — Stem 1° – 2° long.

54. VERBESINA, L.

Heads many-flowered; the ray-flowers few, sometimes wanting. Scales of the involucre imbricated in 2 or more rows. Receptacle flat, or somewhat convex; the chaff concave. Achenia laterally compressed, wingless, 2-awned. — Perennial herbs. Stems mostly winged by the decurrent serrate or lobed leaves. Heads corymbose. Flowers white or yellow.

1. **V. Siegesbeckia,** Michx. Stem 4-winged, branching; leaves opposite, ovate or ovate-lanceolate, acuminate, sharply serrate, 3-ribbed; corymbs trichotomous; rays 1 – 5, yellow; achenia wingless. — Waste places, road-sides, &c., Mississippi to North Carolina. Sept. — Stem 4° – 6° high.

2. **V. Virginica,** L. Stem 3-winged; the branches mostly wingless, tomentose; leaves ovate or ovate-lanceolate, irregularly serrate or sinuate-lobed, tapering into winged petioles, rough above, downy beneath; corymbs cymose; rays 3 – 4, oval, white; achenia winged. (V. sinuata, *Ell.*) — Dry open woods, Florida and northward. Sept. — Stem 2° – 6° high.

55. FLAVERIA, Juss.

Heads few-flowered, discoid, or with a single pistillate ray. Involucre of 3 – 5 oblong nearly equal scales. Receptacle naked. Achenia oblong or club-shaped, smooth, striate. Pappus none. — Tropical herbs, with opposite leaves, and densely clustered heads of yellow flowers.

1. **F. linearis,** Lagasca. Stem somewhat prostrate at the base, branched above, smoothish; leaves fleshy, linear, connate, entire; corymb dense; scales of the involucre mostly 5; ray often wanting. — Key West. — Stem 1° – 2° high.

56. GAILLARDIA, Foug.

Heads many-flowered; the rays neutral, deciduous. Scales of the involucre in 3 rows, acute, spreading above. Receptacle convex or hemispherical, naked or fimbrillate. Rays wedge-shaped, palmately 3-lobed. Corolla of the disk with subulate lobes. Achenia top-shaped, hairy. Pappus of 6 – 10 membranaceous 1-nerved awned scales. — Pubescent branching herbs, with alternate leaves, and solitary heads of yellow or purple flowers terminating the branches.

1. **G. lanceolata,** Michx. Stem (1° – 2°) with long and slender branches; leaves narrow-lanceolate, mostly entire, sessile, the lowest narrowed at the base; rays yellow, sometimes wanting; disk-flowers purple; receptacle naked; scales of the pappus 7 – 9. — Dry pine barrens, Florida to South Carolina. July – Sept.

57. PALAFOXIA, Lagasca.

Heads many-flowered; the ray-flowers pistillate, or none. Scales of the obconical involucre in 2 rows, membranaceous at the summit. Receptacle flat, naked. Achenia slender, 4-angled, tapering at the base. Pappus of 6 – 12 membranaceous denticulate scales, pointed by the prolonged rigid midrib. — Herbs or shrubs, with narrow entire leaves, and heads of white or purple flowers in a terminal corymb.

1. **P. integrifolia,** Torr. & Gray. Stem (2° high) branched above, smoothish; leaves lanceolate, rough; the lower ones often opposite; rays none; flowers purplish; scales of the pappus 8 – 9, linear-subulate. (Polypteris integrifolia, *Nutt.*) — Dry pine barrens, Georgia and Florida. July – Sept.

58. HYMENOPAPPUS, L'Herit.

Heads many-flowered; the flowers all tubular and perfect. Scales of the involucre 6 – 12, oval or obovate, membranaceous, white. Receptacle naked. Corolla slender. Achenia top-shaped, 4-angled. Pappus of 12 – 20 short obtuse

thin scales. — Hoary or woolly herbs, with alternate pinnately lobed or divided leaves. Heads corymbed. Flowers commonly white.

1. **H. scabiosæus,** L'Herit. Hoary-tomentose ; stem corymbosely branched ; leaves pinnatifid or the lowest bipinnatifid, with lanceolate or oblong divisions ; scales of the involucre broadly obovate, longer than the disk ; pappus minute. — Light dry soil, Florida to South Carolina, and westward. April and May. — Stem 2° high. Leaves at length smoothish above.

59. HELENIUM, L.

Heads many-flowered, radiate ; the rays pistillate, wedge-shaped, 3 - 5-cleft. Scales of the involucre in 2 rows ; the outer ones linear or subulate, spreading, the inner fewer and chaffy. Receptacle naked, convex, globose, or oblong. Corolla of the disk 4 - 5-toothed. Achenia top-shaped, furrowed, hairy. Pappus of 5 - 8 membranaceous pointed or awned 1-nerved scales. — Erect branching herbs, with the stem winged by the alternate decurrent leaves. Heads terminating the branches. Flowers mostly yellow.

* *Disk globose : corolla of the disk mostly 5-cleft.*

1. **H. autumnale,** L. Smooth or minutely pubescent ; leaves lanceolate or oblong, serrate, strongly decurrent ; scales of the involucre linear-subulate ; scales of the pappus ovate-lanceolate, denticulate, awn-pointed ; rays 3 - 5-cleft, longer than the disk. — Damp soil, Florida, and northward. Aug. and Sept. — Stem 2° - 4° high. Achenia hairy.

2. **H. parviflorum,** Nutt. Smooth ; leaves lanceolate or oblong-lanceolate, sparingly serrulate, scarcely decurrent ; scales of the involucre filiform ; rays 3-cleft, narrow ; achenia smooth ; pappus awned. — Georgia, *Nuttall.* — Heads smaller than the last.

3. **H. tenuifolium,** Nutt. Smooth ; stem slender, very leafy ; leaves narrow-linear, entire ; heads on long and slender peduncles ; scales of the involucre subulate ; scales of the pappus ovate, entire, abruptly awned ; achenia villous. — Road-sides, West Florida, and westward. September. — Stem 1° - 2° high. Branches erect.

* * *Disk conical or oblong : corolla mostly 4-cleft.*

4. **H. quadridentatum,** Labill. Smoothish ; lowest leaves oblong, pinnatifid ; the upper ones lanceolate, entire ; rays shorter than the oblong disk ; scales of the pappus roundish, obtuse. — River-banks and damp soil, North Carolina, and westward. ① — Stem much branched, 1° - 3° high.

60. LEPTOPODA, Nutt.

Heads many-flowered, radiate ; the rays neutral, 3 - 4-cleft. Disk-flowers 4 - 5-toothed. Scales of the involucre in 1 - 2 rows, spreading ; the exterior leafy, numerous ; the interior short and chaffy. Receptacle conical or hemispherical, naked. Achenia short, truncate at each end, striate. Pappus of 6 - 12 scarious toothed or fimbriate scales. — Perennial herbs. Stems mostly simple, naked above. Leaves alternate. Heads solitary. Flowers yellow or purple.

* *Stems commonly simple, dilated under the head: disk-flowers yellow: rays* 20 *or more.*

+ *Achenia smooth.*

1. **L. Helenium,** Nutt. Smooth or nearly so; leaves entire or obscurely serrate, lanceolate or linear, the lower ones decurrent, the lowest tapering into a petiole; rays 20 – 30 in a single row; scales of the pappus lacerate, and mostly bristle-pointed; achenia smooth. (L. decurrens, *Ell.*) — Margins of pine-barren ponds, Florida to South Carolina, and westward. April and May. — Stem 1° – 2° high.

2. **L. incisa,** Torr. & Gray. Smooth; leaves lanceolate, rather obtuse, sessile, not decurrent, sinuate-pinnatifid or incised; scales of the pappus lacerate, or slightly fimbriate at the summit; rays about 40, in 2 – 3 rows. — Low pine barrens, Georgia and westward. — Resembles No. 4.

+ + *Achenia hairy on the angles.*

3. **L. fimbriata,** Torr. & Gray. Stem smooth, sometimes branching, the peduncle slightly pubescent; leaves linear-lanceolate, acute, entire or obscurely serrate, decurrent; scales of the pappus fimbriate. — Low pine barrens, Florida, and westward. April and May. — Stem 1° – 2° high.

4. **L. puberula,** Macbride. Closely pubescent; leaves somewhat fleshy, linear-lanceolate, sessile but not decurrent, denticulate; the lowest spatulate-lanceolate, toothed or pinnatifid; scales of the pappus obtuse, with slightly lacerated margins. — Wet pine barrens, Florida to North Carolina, and westward. April and May. — Stem 2° high.

5. **L. brevifolia,** Nutt. Stem pubescent above, often sparingly branched; leaves entire, more or less decurrent, the upper ones lanceolate, the lowest spatulate-oblong, obtuse; scales of the pappus obtuse, slightly lacerate at the apex. — Wet places, Alabama to North Carolina. May and June. — Stem 1° – 3° high. Heads large.

* * *Stems branching, leafy: heads corymbose: rays* 8-12 : *flowers of the disk purple.*

6. **L. brachypoda,** Torr. & Gray. Stem pubescent; leaves lanceolate, entire or nearly so, decurrent; scales of the pappus ovate, slightly denticulate, abruptly awn-pointed; achenia hairy on the angles. — River-banks, Florida to North Carolina. May and June. — Stem 1° – 2° high.

61. BALDWINIA, Ell.

Heads many-flowered, globose in fruit; the ray-flowers 20 – 30, neutral, 3-toothed at the apex; tube of the disk-flowers dilated and indurated. Scales of the involucre short, fleshy, imbricated in about 4 rows. Receptacle deeply alveolate; the 5 – 6-angled cells with entire margins, enclosing the slender obconical hairy achenia. Pappus of 7 – 9 oblong nerveless chaffy scales, as long as the achenia. — An erect puberulent mostly simple perennial herb, with alternate fleshy entire linear or (the lowest) spatulate leaves, and a solitary head of yellow flowers on a long peduncle.

1. **B. uniflora,** Ell. — Low pine barrens, Florida to North Carolina, and westward. September. — Stem 2° – 3° high. Heads large. — Dr. Curtis finds a form with the disk-flowers dark-purple. The rays are also sometimes tubular.

62. ACTINOSPERMUM, Ell.

Scales of the involucre in about 2 rows, lanceolate, setaceously acuminate. Margins of the cells of the receptacle cuspidate-toothed. Achenia radiate at the summit. Pappus a row of 12 short roundish entire scales. Otherwise like Baldwinia. — A slender branching annual. Leaves alternate, linear, fleshy. Heads of yellow flowers showy, terminating the peduncle-like summit of the branches.

1. **A. angustifolium,** Torr. & Gray. (Baldwinia multiflora, *Nutt.*) — Dry sandy ridges in the pine barrens, Florida and Georgia. Sept. — Stem 1°–2° high, smooth. Leaves very numerous, sprinkled with jointed hairs.

63. MARSHALLIA, Schreb.

Heads many-flowered; the flowers all tubular and perfect. Corolla pubescent, with linear spreading lobes. Scales of the involucre oblong-linear or lanceolate, in 1–2 rows. Chaff of the convex or conical receptacle narrow-linear, rigid. Achenia oblong, narrowed downward, 5-angled, mostly hairy. Pappus of 5–6 ovate or triangular acuminate entire membranaceous scales. — Perennial herbs, with simple and scape-like or branching stems, smooth entire 3-nerved alternate leaves, and a solitary head of white or purplish flowers terminating the stem or branches. Anthers blue.

1. **M. latifolia,** Pursh. Stem leafy, simple or sparingly branched above; leaves ovate-lanceolate, acuminate; scales of the involucre linear-lanceolate, acute; achenia smooth. — Dry soil, in the upper districts. May and June. — Stem 1° high.

2. **M. lanceolata,** Pursh. Stem naked above, simple, pubescent; leaves lanceolate, obtuse; the lowest spatulate; scales of the involucre oblong-linear, obtuse; achenia pubescent. — Var. PLATYPHYLLA, Curtis. Stem leafy to the middle; leaves longer and broader; the lowest (5′–6′) on long and slender petioles. — Dry open woods, Florida to North Carolina, and westward; the variety in the upper districts. April–June. — Stem 6′–12′ high. Leaves 2′–3′ long.

3. **M. angustifolia,** Pursh. Stem simple or branched, leafy below, puberulent above; leaves linear, acute, the lowest spatulate; scales of the involucre linear and acute; disk at length ovate or oblong; achenia with hairy angles. — Low pine barrens, Florida to North Carolina. July and Aug. — Stem 2°–3° high.

64. MARUTA, Cass. MAY-WEED.

Heads many-flowered; the rays neutral. Scales of the hemispherical involucre imbricated in few rows, shorter than the disk. Receptacle conical, chaffy throughout, or only at the summit. Achenia obovoid, ribbed, smooth. Pappus none. — Branching annuals. Leaves alternate, thrice pinnately divided. Heads solitary, terminal. Rays white.

1. **M. Cotula,** DC. Stem 1° high; divisions of the leaves linear; scales of the involucre with scarious margins; disk yellow. (Anthemis Cotula, *L.*) — Waste places. Introduced. May and June.

65. ACHILLEA, L. Yarrow.

Heads many-flowered; the rays pistillate, few and short. Scales of the involucre imbricated. Receptacle flat or elongated, chaffy. Achenia oblong, compressed, margined. Pappus none. — Perennial herbs. Leaves alternate, commonly pinnately divided. Heads small, corymbose.

1. **A. millefolium,** L. Stems (1° high) simple, pubescent, tufted; leaves lanceolate, bipinnatifid, the divisions linear, 3–5-cleft; corymbs dense, compound; rays 4–5, white. — Old fields and around dwellings. Introduced. May – Sept.

66. LEUCANTHEMUM, Tourn. Ox-eye Daisy.

Heads many-flowered; the rays numerous, pistillate. Scales of the involucre imbricated, broad, rounded, with scarious margins. Receptacle flat or convex, naked. Achenia nearly terete. Pappus none. — Perennial herbs. Leaves alternate, toothed or pinnatifid. Heads solitary, terminating the stem or branches. Rays white.

1. **L. vulgare,** Lam. Stem (6′–12′ high) simple, naked above; leaves pinnatifid; the lowest spatulate-obovate; the upper lanceolate; heads showy. (Chrysanthemum Leucanthemum, *L.*) — Fields. Introduced. May and June.

67. TANACETUM, L. Tansy.

Heads many-flowered, discoid; the flowers all fertile; the marginal ones chiefly pistillate, 3–5-toothed. Scales of the involucre imbricated, dry. Receptacle convex, naked. Achenia angled or ribbed. Pappus a narrow border, or none. — Herbs with alternate dissected leaves, and solitary or corymbose heads of yellow flowers.

1. **T. vulgare,** L. Stem smooth, erect; leaves bipinnately divided, the lobes serrate; heads corymbose, numerous; pappus 5-lobed. — Common in gardens, and sparingly naturalized in North Carolina. ♃ — Stem 1°–2° high.

68. ARTEMISIA, L. Wormwood.

Heads few- or many-flowered, discoid; the central flowers perfect, 5-toothed (sometimes abortive), the marginal ones pistillate, 3-toothed. Scales of the involucre imbricated, mostly with scarious margins. Receptacle convex, naked or villous. Achenia obovoid. Pappus none. — Aromatic herbs or shrubs. Leaves alternate, pinnately divided. Heads small, in panicled spikes or racemes.

1. **A. caudata,** Michx. Smooth; stem slender, branching; lowest leaves 2–3-pinnately divided, the upper ones pinnate, with the divisions filiform; heads globular, in small racemes, forming an elongated panicle. — Dry open woods, West Florida, and northward. Sept. ② — Stem 2°–6° high. Receptacle naked. Disk-flowers abortive.

69. SOLIVA, Ruiz & Pavon.

Heads many-flowered, monœcious; the fertile flowers in several rows, apetalous or nearly so; the staminate few in the centre, with a 3–6-toothed corolla.

Scales of the involucre 5 – 10, in a single row. Receptacle flat, naked. Achenia compressed, with winged or thickened margins, armed with the persistent rigid style. Pappus none. — Small depressed herbs, with petioled pinnately divided leaves, and small sessile or rarely pedunculate heads.

1. **S. nasturtiifolia,** DC. Very low and depressed; leaves on short petioles, pinnately parted; the lobes 3 – 4 on each side, obtuse, entire; heads sessile; achenia cuneiform, villous at the apex; the callous margin tuberculate-rugose throughout. (Gymnostylis stolonifera, *Nutt.*) — South Carolina, around Charleston. Introduced. Feb. – May.

70. GNAPHALIUM, L. Everlasting.

Heads many-flowered, discoid; the exterior and pistillate ones very slender, mostly in several rows; the central ones perfect. Scales of the involucre imbricated, appressed, scarious. Receptacle flat, naked. Achenia terete or more or less flattened. Pappus a single row of capillary bristles. — Woolly or downy herbs. Leaves alternate, undivided. Heads in crowded spikes or corymbs. Involucre colored.

1. **G. polycephalum,** Michx. Stem woolly, white, branching above; leaves linear, sessile, undulate, white beneath; heads corymbose; scales of the involucre white, obtuse. — Old fields, common. Sept. and Oct. ① — Stem 2° high. Perfect flowers few.

2. **G. purpureum,** L. Woolly or tomentose and hoary throughout; stems branching at the base, ascending, simple; lowest leaves spatulate-lanceolate, the upper ones linear; heads in crowded spikes. — Cultivated ground, very common. April – June. ① — Stems 4′ – 12′ high.

71. ANTENNARIA, Gært. Everlasting.

Heads many-flowered, dicœcious, discoid; the corolla of the sterile flowers 5-cleft; of the pistillate ones filiform. Scales of the involucre imbricated, scarious, colored. Receptacle convex or flat. Achenia nearly terete. Pappus a single row of capillary bristles, which, in the staminate flowers, are thickened at the apex. — Perennial downy or woolly herbs, with alternate entire leaves, and corymbose rarely single heads.

1. **A. margaritacea,** R. Br. Stem corymbose above, woolly; leaves linear-lanceolate, with revolute margins, tomentose; heads corymbose; involucre white. — Upper districts of North Carolina, and northward. Sept. and Oct. — Stem 1° – 2° high.

2. **A. plantaginifolia,** Hook. Stoloniferous; stems scape-like; radical leaves spatulate or obovate, hoary, becoming smooth above, 3-ribbed; those of the stem few, linear or lanceolate; heads small, in a terminal cluster, sometimes single and larger; involucre white or purplish. — Sterile soil, Florida, and northward. March – May. — Stem 6′ – 12′ high.

72. ERECHTHITES, Raf. Fireweed.

Heads many-flowered, discoid; the marginal flowers pistillate, very slender, 2–3-toothed; the others perfect, 4–5-toothed. Scales of the cylindrical involucre in a single row, linear, acute, bracted. Receptacle naked. Achenia oblong, striate. Pappus of copious soft hairs. — Erect annual herbs, with alternate simple leaves, and corymbose heads of greenish flowers.

1. **E. hieracifolia,** Raf. Stem mostly branched, smooth or hairy; leaves lanceolate, sessile, sharply serrate or toothed; the upper somewhat clasping; bracts subulate, minute; pappus white. (Senecio hieracifolius, *L.*) — Rich soil, common. July – Sept. — Stem 1° – 5° high.

73. CACALIA, L.

Heads 5 – many-flowered; the flowers all tubular and perfect, 5-cleft. Scales of the involucre 5 – 30, in a single row. Receptacle flat, naked, or with a tubercular prominence in the centre. Achenia oblong, smooth. Pappus of numerous capillary bristles. — Perennial, mostly smooth and tall herbs, with alternate entire or lobed leaves, and corymbose heads of white flowers.

* *Receptacle flat: involucre about* 12*-leaved,* 25 – 30*-flowered.*

1. **C. suaveolens,** L. Smooth; leaves ovate, hastate, acute, toothed-serrate, on winged petioles; the uppermost sessile; bracts filiform. — Low ground, West Florida, and northward. Sept. and Oct. — Stem 3° – 5° high.

* * *Receptacle tubercular in the centre: scales of the involucre and flowers* 5.

2. **C. reniformis,** Muhl. Stem angled; leaves not glaucous, angularly toothed, on slender petioles; the lowest large, reniform, the upper ones roundish; corymb compound. — Damp soil in the mountains of North Carolina and Tennessee. July and Aug. — Stem 4° – 9° high. Radical leaves sometimes 2° in diameter, the teeth mucronate.

3. **C. atriplicifolia,** L. Stem terete, corymbosely branched above; leaves glaucous beneath, angularly lobed, the lobes mostly entire, mucronate; the lowest ones reniform; the upper rhomboid; corymbs compound. — Woods and moist banks, Florida, and northward. — Aug. and Sept. — Stem 4° – 8° high. Leaves smaller and thicker than the last.

4. **C. diversifolia,** Torr. & Gray. Stem angled; leaves not glaucous, petioled; the lowest broadly cordate or cordate-ovate, obtusely toothed, the upper 3 – 5-lobed. — Muddy banks of the Chipola River, Marianna, West Florida. May – Aug. — Stem 2° – 3° high.

5. **C. ovata,** Walt. Stem terete; leaves glaucous beneath, 3 – 5-nerved, ovate or oval, obtuse, entire or wavy-toothed; the lowest long-petioled; the upper ones sessile; corymbs open. — Swamps, Georgia, Florida, and westward. July and Aug. — Stem 3° – 4° high. Lowest leaves 5′ – 8′ long.

6. **C. tuberosa,** Nutt. Stem furrowed, angled; leaves not glaucous, oval or lanceolate-oblong, strongly 5 – 7-nerved, entire or slightly toothed; the lowest long-petioled; corymbs dense. — Swamps, Georgia, Florida, and westward. Aug. and Sept. — Stem 3° – 5° high. Leaves thick.

7. **C. lanceolata,** Nutt. Stem terete; leaves rather fleshy, lanceolate or linear-lanceolate, entire, 3-nerved, somewhat glaucous; the lowest tapering into a long petiole, the upper sessile. — Brackish marshes, Georgia, Florida, and westward. Aug. and Sept. — Stem 3° – 5° high. Lowest leaves 1° or more long.

74. SENECIO, L. Groundsel. Butter-weed.

Heads many-flowered; the flowers all tubular and perfect, or with pistillate rays. Scales of the involucre in a single row, often bracted. Receptacle naked or alveolate. Achenia not beaked nor winged. Pappus of copious soft hairs. — Herbs, with entire or pinnately divided leaves. Heads corymbose. Flowers yellow. Pubescence mostly webby and deciduous.

* *Annual: heads radiate.*

1. **S. lobatus,** Pers. Smooth; stem furrowed, hollow; leaves tender, lyrate-pinnatifid, with rounded toothed lobes; the earliest orbicular, long-petioled; rays about 12. — Low ground, Florida to North Carolina, and westward. March and April. — Stem 1° – 3° high. Lobing of the leaves variable.

* * *Perennial: heads radiate: lowest leaves petioled, undivided; the others pinnately lobed or toothed; the uppermost sessile.*

2. **S. aureus,** L. Smooth, or more or less woolly when young; stem (2° high) slender; radical leaves long-petioled, round-cordate, crenate; the others lanceolate or oblong-lanceolate, pinnatifid; rays 8 – 12; achenia smooth. — Mountains of North Carolina. July.

Var. **fastigiatus.** Stem stout (2° – 3° high), stoloniferous; petioles of the larger (2′ wide) leaves, as also the involucre, densely woolly at the base. — River-banks, Florida.

Var. **Balsamitæ.** Radical leaves spatulate-lanceolate or obovate; lower part of the stem often densely woolly; achenia hairy. — Dry open woods in the upper districts. May and June. — A polymorphous species.

3. **S. tomentosus,** Michx. Woolly and hoary throughout; the leaves becoming smoothish; lowest leaves oblong, crenate, obtuse; stem-leaves few, scattered, lanceolate, acute, serrate or toothed; rays 12 – 15; achenia hairy. — Damp soil, Florida to North Carolina. April and May. — Stems mostly simple, 2° – 3° high. Heads rather large.

4. **S. Elliottii,** Torr. & Gray. Smoothish; leaves chiefly radical, thick, obovate or roundish, crenate, on short winged petioles; those of the stem small, pinnatifid; heads crowded; rays 9 – 12; achenia smooth. (S. obovatus, *Ell.* in part.) — Rocky places, West Florida to North Carolina. April and May. — Stem 1° high. Radical leaves 2′ – 3′ wide.

* * * *Perennial: heads radiate: leaves all bipinnately dissected.*

5. **S. Millefolium,** Torr. & Gray. Woolly when young, at length nearly smooth; stems tufted, corymbose above; leaves lanceolate, with the divisions linear and toothed, the lowest ones petioled; heads crowded; rays 9 – 12. — Mountains of North Carolina, *Buckley.* June. — Stems 1° – 2° high.

75. RUGELIA, Shuttl.

Heads many-flowered, the flowers all tubular and perfect. Scales of the campanulate involucre lanceolate, equal, in a single row. Receptacle convex, naked. Corolla 5-cleft. Style bulbous at the base, the long branches truncated at the apex, and beset with rigid reflexed hairs. Achenia terete, striate. Pappus of numerous rather rigid rough bristly hairs. — A perennial herb, with alternate undivided leaves, and large heads in a simple corymbose raceme.

1. **R. nudicaulis,** Shuttl. Minutely pubescent; rhizoma creeping; stem simple, erect; leaves ovate, acute at each end, denticulate; the lowest ones large (2′–4′), crowded, on long margined petioles, the others small, scattered, and nearly sessile; heads on long bracted peduncles. — Smoky Mountains, Tennessee, *Rugel, Buckley.* — Stem 1° high.

76. ARNICA, L.

Heads many-flowered, radiate; the rays pistillate. Scales of the campanulate involucre lanceolate, equal, in about two rows. Receptacle flat, hairy. Achenia terete, narrowed downward, somewhat ribbed. Pappus a single row of rough bristly hairs. — Perennial herbs. Leaves opposite, undivided. Heads single or corymbose.

1. **A. nudicaulis,** Ell. Hirsute; radical leaves spreading, oval or obovate, obtuse, 3–5-ribbed, serrate or entire; the others (2–3 pairs) distant, oblong, sessile; heads corymbose, showy; achenia smoothish. — Wet pine barrens, Florida, and northward. April and May. — Stem 1°–2° high, simple, or with few opposite branches.

Tribe V. CYNAREÆ. *Heads discoid; the flowers all tubular; the exterior ones sometimes enlarged and ray-like: style thickened at the summit; the stigmatic lines extending to the summit of the branches, without appendages.*

77. CENTAUREA, L. Star-Thistle.

Heads many-flowered; the marginal flowers mostly large and sterile. Scales of the involucre imbricated. Receptacle bristly. Achenia compressed. Pappus of rough bristles in one or more rows, sometimes wanting. — Herbs. Leaves alternate. Heads solitary.

1. **C. Calcitrapa,** L. Stem diffusely branched, hairy; leaves pinnately lobed; the lobes linear, toothed; heads sessile; involucre spiny; pappus none. — North Carolina. Naturalized. — Flowers purple.

78. CIRSIUM, Tourn. Thistle.

Heads many-flowered, discoid; the flowers all similar and perfect. Scales of the involucre imbricated in many rows, all but the innermost ones usually spine-pointed. Receptacle bristly. Achenia oblong, compressed, smooth. Pappus of numerous plumose hairs. — Herbs, with alternate sessile or decurrent mostly pinnatifid and spiny leaves. Heads large, subglobose. Flowers purple or whitish.

* *Leaves decurrent.*

1. **C. lanceolatum,** Scop. Stem hairy, branched; leaves pinnatifid, spiny, hirsute above, woolly beneath; scales of the involucre webby, tipped with strong erect spines; flowers purple. — Banks of the Savannah River at Augusta to North Carolina, and northward. Introduced. Sept. ② — Stem 2° – 3° high.

* * *Leaves sessile.*

+ *Scales of the involucre tipped with spreading spines.*

2. **C. discolor,** Spreng. Stem tall, hirsute, the branches leafy to the summit; leaves deeply pinnatifid, smoothish, or with scattered hairs above, hoary-tomentose beneath; the divisions 2 – 3-lobed, pointed with a spine, and ciliate on the margins; scales of the involucre narrow, webby, tipped with a very slender spreading spine; flowers purple. — Margins of fields, &c. in the upper districts. July – Sept. ② — Stem 3° – 6° high. Lower leaves 6′ – 12′ long. Heads about 1′ in diameter.

3. **C. altissimum,** Spreng. Stem tall, pubescent; the branches leafy to the summit; leaves rough-pubescent above, hoary-tomentose beneath, fringed with fine prickles; the lowest petioled, pinnatifid; the upper sessile, entire or pinnately lobed; heads bracted; scales of the involucre webby when young, tipped with a weak prickle; flowers purple. — Fields and thickets, Mississippi to North Carolina, and northward. Aug. and Sept. — Stem 3° – 10° high. Heads about 1′ in diameter. Involucre somewhat viscid.

4. **C. Nuttallii,** DC. Stem angled, paniculately branched, smooth or hairy; the branches naked at the summit; leaves clasping, soft-hairy, becoming smoothish above, pinnatifid; the numerous spreading lobes lanceolate, 3-toothed, tipped with strong spines, and ciliate on the margins; heads numerous, small, bractless; scales of the involucre appressed, viscid, tipped with a short, at length spreading prickle; corolla white or pale purple. (Cnicus glaber, *Ell.*) — Dry light soil, Florida to South Carolina. July and Aug. — Stem 3° – 8° high. Heads 8″ – 10″ in diameter.

5. **C. Virginianum,** Michx. Stem slender, simple or sparingly branched, hoary-tomentose; leaves linear, or linear-lanceolate, rigid, smooth above, hoary beneath; the margins revolute, toothed or pinnatifid, and spiny; scales of the involucre viscid, spiny; flowers purple. — Pine-barren swamps, Florida, and northward. Aug. and Sept. — Stem 2° – 3° high. Heads ½′ in diameter.

+ + *Scales of the involucre spineless, or the outer ones spine-pointed.*

6. **C. muticum,** Michx. Stem tall, branching, commonly hairy; leaves with scattered hairs above, pubescent or at length nearly smooth beneath, bristly-ciliate on the margins, deeply pinnatifid; the lobes lanceolate, 2 – 3-toothed, spiny; scales of the involucre unarmed, webby, viscid; flowers purple. — Swamps in the upper districts. Aug. and Sept. — Stem 3° – 8° high. Heads 1′ in diameter.

7. **C. Lecontei,** Torr. & Gray. Stem simple, or with 1 – 3 nearly naked branches, hoary-tomentose; leaves lanceolate, smooth above, hoary beneath, entire, the margins fringed with bristly hairs, and spiny; the earliest ones pin-

natifid; scales of the involucre cuspidate, viscid, not webby; flowers purple. — Pine-barren swamps, Florida, Georgia, and westward. July and Aug. — Stem 2° – 3° high, rigid. Heads 1′ in diameter.

8. **C. repandum,** Michx. Webby throughout when young; stem simple, very leafy; leaves oblong-linear, clasping, the margins undulate and closely fringed with bristly spines; heads mostly solitary; flowers purple. — Dry pine barrens, Florida to North Carolina. June and July. — Stem 1° – 2° high.

9. **C. horridulum,** Michx. Webby when young, at length smoothish; stem thick, branching; leaves clasping, pinnatifid, armed with long and stout spines; heads large, surrounded by a whorl of linear pectinate spiny bracts; scales of the involucre linear-subulate, spine-pointed; flowers purple or yellowish. — Sandy soil, Florida, and northward. April and May. — Stem 1° – 3° high, often purple.

79. LAPPA, Tourn. Burdock.

Heads many-flowered, discoid; the flowers all perfect and similar. Scales of the globose involucre imbricated, coriaceous, with subulate spreading hooked tips. Receptacle flat, bristly. Achenia oblong, compressed, transversely rugose. Pappus of numerous short caducous bristles. Anthers caudate at the base. — Biennial branching herbs, with large cordate petioled leaves. Heads small. Flowers purple or white.

1. **L. major,** Gært. Leaves undulate on the margins, pubescent beneath; the uppermost ovate; heads corymbose; involucre smooth or webby. — Waste places, North Carolina. Introduced from Europe.

Suborder II. LABIATIFLORÆ.

Tribe VI. MUTISIACEÆ. *Heads with the flowers dissimilar or rarely diœcious; the marginal ones pistillate or neutral, ligulate or bilabiate: style as in Tribe* V.

80. CHAPTALIA, Vent.

Heads many-flowered, radiate. Ray-flowers pistillate, in two rows, the outer ones ligulate, the inner ones ligulate or 3 – 5-toothed and filiform. Disk-flowers perfect but sterile, bilabiate, the outer lip 3-cleft, the inner 2-cleft. Anthers caudate. Scales of the cylindrical involucre lanceolate, acute, imbricated in few rows. Receptacle naked. Fertile achenia oblong, smooth, narrowed at each end. Pappus of numerous bristly hairs. — Stemless perennial herbs; the simple scape bearing a single head of white or purplish flowers. Leaves smooth above, white tomentose beneath.

1. **C. tomentosa,** Vent. — Low pine barrens, Florida to North Carolina. Feb. – April. — Scape tomentose, 6′ – 12′ high. Leaves spatulate-lanceolate or oblong. Heads nodding.

Suborder III. LIGULIFLORÆ.

Tribe VII. CICHORACEÆ. *Style cylindrical above and pubescent, like the rather obtuse branches; the stigmatic lines terminating below or near the middle of the branches. — Plants with milky juice: leaves alternate.*

81. APOGON, Ell.

Heads 10 – 20-flowered. Scales of the involucre mostly 8, somewhat in two rows, nearly as long as the corolla, connivent in fruit. Receptacle naked. Achenia ovoid-oblong, terete, ribbed and transversely striate, smooth. Pappus none. — A low smooth and branching annual, with lanceolate entire or toothed leaves, and single or umbellate heads of yellow flowers, borne on slender peduncles.

1. **A. humilis,** Ell. — Florida to South Carolina. April and May. — Stem-leaves clasping; the uppermost mostly opposite. — Plant 6′ – 12′ high.

82. KRIGIA, Schreb.

Heads 15 – 30-flowered. Scales of the involucre 6 – 15, somewhat in 2 rows, equal. Receptacle naked. Achenia top-shaped, 5-angled. Pappus double; the outer of 5 broad chaffy scales; the inner of 5 rough bristles. — Small annual herbs, branching at the base, with naked peduncle-like stems, each terminated by a small head of yellow flowers. Leaves chiefly radical, mostly lyrate or toothed.

1. **K. Virginica,** Willd. Proper stem short, simple or forking; scapes at length several, slightly pubescent, elongated in fruit; leaves somewhat glaucous; the lowest rounded, entire; the others spatulate-oblong, pinnatifid. (K. dichotoma, *Nutt.*) — Dry sandy soil, Florida, and northward. March – May. — Scapes at length 1° high.

2. **K. Caroliniana,** Nutt. Stem short; scapes pubescent or somewhat hispid near the apex; leaves linear-lanceolate, acute at each end, entire or sparingly toothed, or the upper ones variously lobed. (K. leptophylla, *DC.*) — Dry sandy places, Florida to North Carolina. Feb. and March. — Scapes 3′ – 12′ high.

83. CYNTHIA, Don.

Heads many-flowered. Scales of the involucre 12 – 15. Achenia short, oblong or top-shaped, obscurely 4-angled, not beaked. Pappus double; the outer of numerous, very small chaffy scales; the inner of numerous bristles. — Perennial nearly smooth herbs, bearing single heads of yellow flowers on long more or less glandular peduncles or scapes. Leaves alternate, entire or pinnatifid.

1. **C. Virginica,** Don. Root fibrous; stem branched above, bearing 3 – 5 heads on slender umbellate peduncles; radical leaves oval or spatulate-oblong, toothed or pinnatifid; the upper ones clasping and entire; achenia oblong. — Sandy soil in the upper districts. May – July. — Stem 1° – 2° high.

2. **C. Dandelion,** DC. Stemless or nearly so; roots bearing small tubers; scapes several, bearing single heads; lowest leaves spatulate-oblong; the

others linear, elongated, entire or toothed; achenia somewhat top-shaped. — Var. MONTANA. Stem manifest, decumbent; upper leaves nearly opposite. (Hyoseris montana, *Michx.*?) — Damp soil, Florida, and northward; the variety on the mountains of North Carolina. March – May. — Scapes 6′ – 12′ high.

84. HIERACIUM, Tourn.

Heads many-flowered. Scales of the involucre imbricated, or in 2 rows; the outer row short. Receptacle nearly naked. Achenia not beaked, commonly terete or spindle-shaped, ribbed. Pappus a single row of persistent brownish-white hairs. — Perennial herbs with alternate entire or toothed leaves, and single, corymbose, or panicled heads of yellow flowers. — Involucre, in our species, in 2 rows, the outer short and bract-like.

1. **H. scabrum,** Michx. Stem stout, leafy, hirsute below, rough above; panicle somewhat corymbose; leaves oval, sessile; the lowest spatulate-oblong, hirsute; peduncles and involucre tomentose and glandular-hispid; achenia cylindrical. (H. Marianum, *Ell.*) — Open woods in the upper districts. Aug. and Sept. — Stem 1° – 3° high. Heads large, many-flowered.

2. **H. Gronovii,** L. Stem leafy and hirsute below, naked and smoother above; leaves entire or denticulate, hirsute; the lowest spatulate-oblong; the upper small, sessile; panicle narrow, elongated; achenia narrowed upward. — Dry sandy soil, Florida, and northward. Sept. and Oct. — Stem 1° – 2° high. Lowest leaves spreading on the ground.

3. **H. venosum,** L. Stem slender, nearly leafless, smooth; lowest leaves oblong-obovate, smooth, or hirsute on the veins beneath, often veined with purple; the others (1 – 3) small and remote; heads small, in a spreading corymbose panicle, smoothish; achenia linear. — Shady soil in the upper districts. May – July. — Stem 1° – 2° high.

4. **H. paniculatum,** L. Stem slender, leafy, villous below; leaves thin, lanceolate, denticulate, acute, smooth; panicle divaricate; heads small, 12 – 20-flowered; involucre smooth; achenia short, not narrowed upward. — Open woods along the mountains, Georgia, and northward. Aug. and Sept. — Stem 2° – 3° high. Peduncles filiform.

85. NABALUS, Cass.

Heads 5 – 20-flowered. Involucre cylindrical, composed of 5 – 14 linear scales, and several short exterior ones. Receptacle naked. Achenia linear-oblong or cylindrical, furrowed, glabrous, not narrowed upward. Pappus of numerous straw-colored or brownish bristly hairs. — Perennial herbs, with bitter tuberous roots, entire or variously lobed leaves, and nodding heads of yellowish white or purplish flowers, in short racemes or clusters.

1. **N. albus,** Hook. Smooth; stem paniculate, purplish; leaves acutish, angled, toothed, or variously 3 – 5-lobed or parted; the lowest petioled; the uppermost nearly sessile; racemes short, spreading; involucre purplish, of about

8 scales, 8 – 12-flowered; pappus light brown; flowers white or cream-color. — Open woods in the upper districts of Georgia, and northward. Sept. — Stem 3° – 4° high.

2. **N. altissimus,** Hook. Smooth; stem simple or sparingly branched above; leaves thin, ovate or cordate, petioled, acuminate, denticulate, or the lower ones palmately 3 – 5-cleft or parted; heads in small axillary and terminal clusters, forming a long panicle; involucre slender, greenish, of about 5 scales, 5 – 6-flowered; pappus dirty white or straw-colored. — Varies with the wavy-toothed leaves, deltoid; the lowest hastate – 3-angled or parted. (Prenanthes deltoidea, *Ell.*) — Woods along the mountains, Georgia, and northward. Sept. — Stem 3° – 5° high. Flowers yellowish, or greenish white.

3. **N. Fraseri,** DC. Smooth or slightly pubescent; stem corymbosely panicled above; leaves deltoid, mucronate, pinnately 3 – 7-lobed, on winged petioles; the upper lanceolate, often entire; clusters small, terminal; involucre greenish, smooth or hairy, of about 8 scales, 8 – 12-flowered; pappus straw-color. — Varies with the lanceolate or oblong leaves mostly sessile, or the uppermost clasping; the 12 – 15-flowered involucre hirsute with long purplish hairs. (Prenanthes crepidinea, *Ell.*) — Dry sterile soil, Florida, and northward. Sept. — Stem 1° – 4° high.

4. **N. virgatus,** DC. Smooth; stem simple, virgate; leaves lanceolate, acute, sessile or partly clasping; the uppermost small, entire; the lowest deeply pinnatifid, on margined petioles; clusters of heads small, racemose; involucre smooth, purplish, of about 8 scales, 8 – 12-flowered; pappus straw-color. — Damp soil, Florida, and northward. Sept. — Stem 2° – 4° high. Flowers purplish.

5. **N. crepidineus,** DC. Smoothish; stem tall, corymbosely panicled; leaves oblong-ovate or somewhat hastate, acute, unequally toothed, the lowest on winged petioles; involucre brown, hairy, of 12 – 14 scales, 20 – 35-flowered; pappus light brown. — Mountains of North Carolina and Tennessee. Sept. — Stem 5° – 8° high. Lower leaves 8′ – 12′ long. Flowers yellowish-white.

86. LYGODESMIA, Don.

Heads 5 – 10-flowered. Involucre elongated, cylindrical, of 5 – 8 linear scales, and a few short exterior ones. Receptacle naked. Achenia linear, elongated, smooth, striate, not narrowed upward. Pappus of copious smoothish white hairs in several rows. — Perennial smooth herbs, with linear or filiform leaves. Heads solitary. Flowers rose-color.

1. **L. aphylla,** DC. Stem simple or forking; lowest leaves filiform, elongated; the others remote, small, and bract-like; heads showy. (Prenanthes aphylla, *Nutt.*) — Dry sandy pine barrens, Georgia and Florida. April and May. — Stem 1° – 2° high.

87. TARAXACUM, Haller. Dandelion.

Heads many-flowered. Involucre double; the exterior of small spreading scales; the interior erect in a single row. Receptacle naked. Achenia oblong,

ribbed or angled, muricate on the ribs; the apex abruptly produced into a long beak. Pappus of copious white hairs. — Stemless perennial herbs. Scapes hollow, bearing a single head of yellow flowers. Leaves all radical, oblong or lanceolate, entire or pinnatifid.

1. **T. Dens-leonis,** Desf. Leaves pinnatifid, the lobes acute, toothed; heads showy. — Damp soil, sparingly naturalized.

88. PYRRHOPAPPUS, DC.

Heads many-flowered. Involucre double, of numerous subulate scales; the inner ones erect and partially united, often with a callous appendage at the apex. Receptacle flat, naked. Achenia oblong, nearly terete, 5-furrowed; the apex narrowed into a long filiform beak. Pappus of copious soft reddish or brownish hairs. — Smooth annual herbs. Leaves oblong or lanceolate, commonly toothed or pinnatifid. Heads solitary, terminating the naked stem or peduncle-like branches. Flowers yellow.

1. **P. Carolinianus,** DC. Stem branching; leaves lanceolate, mostly toothed or pinnatifid; achenia shorter than the filiform beak. (Borkhausia, *Ell.*) — Fields, Florida to Mississippi, and northward. April – July. — Stem 1°–2° high.

89. LACTUCA, L. Lettuce.

Heads few- or many-flowered. Scales of the cylindrical involucre imbricated; the outer ones short. Receptacle naked. Achenia compressed parallel to the scales, smooth, abruptly narrowed into a filiform beak. Pappus of copious soft white hairs. — Tall herbs, with entire or pinnatifid leaves. Heads paniculate. Flowers white, purple, blue, or yellow.

1. **L. elongata,** Muhl. Smooth or nearly so; stem tall (4°–8°), simple or paniculate; leaves elongated, lanceolate, sessile or partly clasping; the upper ones mostly entire; the lower pinnatifid; panicle long, leafless; flowers yellow. — Var. INTEGRIFOLIA. Leaves all undivided, or the lowest pinnatifid; flowers yellow or purplish. — Var. GRAMINIFOLIA. Smaller (2°–3°), leaves linear or linear-lanceolate, rather rigid, all entire, or the lowest ones sparingly toothed or pinnatifid; flowers purple. — Dry soil, Florida, and northward. July – Sept.

90. MULGEDIUM, Cass.

Heads many-flowered. Scales of the involucre imbricated, the outer ones short. Receptacle naked. Achenia smooth, laterally compressed, narrowed into a short beak, which is expanded into a ciliate disk at the apex. Pappus of copious white or tawny hairs. — Tall herbs. Leaves pinnatifid or undivided. Flowers mostly blue.

* *Pappus white.*

1. **M. acuminatum,** DC. Smooth; stem panicled above; leaves ovate or ovate-lanceolate, acuminate, toothed, on winged petioles, the lowest sometimes sinuate-lobed; heads racemed, on spreading peduncles. (Sonchus, *Ell.*)

— Margins of fields, &c., Florida, and northward. Sept. ② — Stem 3° - 6° high. Leaves 3′ - 6′ long, often hairy beneath. Flowers blue.

2. **M. Floridanum,** DC. Smooth; stem panicled above; leaves all pinnatifid and toothed, with the terminal lobe larger and 3-angled, or the uppermost lanceolate, sessile or clasping; heads racemose-panicled; flowers blue. — Rich soil, Florida to North Carolina. Aug. and Sept. — Stem 3° - 6° high.

* * *Pappus tawny.*

3. **M. leucophæum,** DC. Smoothish; stem panicled above; leaves numerous, irregularly pinnatifid, with coarsely-toothed lobes; the terminal lobe 3-angled, or in the upper leaves often linear and entire; racemes panicled. — Mountains of North Carolina. Sept. ② — Stem 3° - 12° high. Leaves 6′ - 12′ long. Flowers pale blue.

91. SONCHUS, L.

Heads many-flowered. Scales of the involucre imbricated. Receptacle naked. Achenia compressed, ribbed, not beaked nor narrowed at the apex. Pappus of copious soft white hairs. — Annuals. Leaves entire or pinnatifid. Heads somewhat umbelled. Flowers yellow.

1. **S. oleraceus,** L. Smooth; stem branching; leaves pinnatifid, with spiny-toothed lobes, clasping; the lowest petioled; achenia transversely roughened. — Waste places. Introduced. June - Aug. — Stem 1° - 2° high.

2. **S. asper,** Vill. Smooth, or the upper part of the stem and peduncles hispid; leaves entire, clasping, fringed with weak spines; the lowest oblong-obovate, the upper lanceolate; achenia smooth. — Fields, Florida, and northward. June - Aug. — Stem 2° - 3° high.

ORDER 73. LOBELIACEÆ. (LOBELIA FAMILY.)

Chiefly herbs, with milky juice. Leaves alternate, without stipules. Flowers irregular. — Calyx 5-lobed, the tube adherent to the 2-celled ovary. Corolla unequally 5-lobed, valvate in the bud; the tube split on one side to the base. Stamens 5, inserted on the calyx; the anthers, and commonly the filaments, united into a tube. Style solitary: stigma 2-lobed, surrounded with a ring of hairs. Fruit baccate and indehiscent, or capsular and 2 - 3-valved, many-seeded. Seeds anatropous. Embryo straight in fleshy albumen. — Acrid poisonous plants.

1. LOBELIA, L. LOBELIA.

Corolla bilabiate; the upper lip small, erect or reflexed, 2-parted, the lower spreading, palmately 3-cleft; the tube straight. Anthers, or a part of them, bearded at the apex, curved. Capsule 2-celled, 2-valved at the apex, many-seeded. — Stems erect. Leaves undivided; the serratures glandular Flowers blue, white, or scarlet, in terminal racemes or spikes.

** Flowers scarlet.*

1. **L. cardinalis,** L. (CARDINAL-FLOWER.) Smooth or slightly pubescent; stem stout, simple; leaves lanceolate, denticulate; bracts leafy; stamens and style much longer than the corolla. — Muddy banks, Florida to Mississippi, and northward. July – Sept. ♃ — Stem 2° – 3° high. Raceme many-flowered. Flowers very showy.

** * Flowers blue and white.*

+– Sinuses of the calyx with deflexed appendages.

2. **L. syphilitica,** L. Hairy; leaves thin, lanceolate, acute at each end, coarsely serrate; racemes leafy, many-flowered; calyx hairy; the lanceolate denticulate lobes half as long as the large (1′ long) light blue corolla. — Swamps along the mountains, Georgia, and northward. Aug. and Sept. ♃ — Stem 1° – 3° high.

3. **L. puberula,** Michx. Softly pubescent or villous, or sometimes nearly smooth; leaves thickish, mostly obtuse, lanceolate or oblong, glandular-denticulate; spikes mostly 1-sided; calyx top-shaped, the linear lobes nearly as long as the tube of the bright blue corolla. — Swamps and low ground, Florida to Mississippi, and northward. Aug. and Sept. ♃ — Stem 1° – 2° high. Corolla half as large as in the preceding. Appendages of the calyx obtuse.

4. **L. leptostachys,** A. DC. Closely pubescent; stem slender, simple; leaves oblong-lanceolate, obtuse, denticulate; flowers small, crowded in an elongated spike; appendages of the calyx 10, subulate, as long as the tube. — South Carolina and northward. July and Aug. ♃ — Stem 1° – 1½° high. Corolla 3″ – 4″ long.

5. **L. brevifolia,** Nutt. Stem thick, virgate, angled, smooth or pubescent; leaves short (4″ – 12″ long), fleshy, oblong-linear, obtuse, toothed, spreading or reflexed; the lowest wedge-shaped; calyx hirsute, the ovate-lanceolate lobes strongly toothed, the 5 appendages obtuse; corolla pale blue. — Damp open pine barrens, Florida, Alabama, and westward. Oct. ♃ — Stem 1° – 1½° high. Leaves very numerous.

+– +– Sinuses of the calyx without appendages.

6. **L. amœna,** Michx. Smooth or rough-pubescent; leaves scattered, oblong, obtuse, denticulate, the lower ones tapering into a long petiole, the uppermost nearly sessile; racemes 1-sided, many-flowered; calyx-lobes linear-subulate, mostly glandular; corolla (1′ long) bright blue. — Swamps, Florida to South Carolina, and westward. Sept. and Oct. ♃ — Stem 2° – 4° high. Lowest leaves 3′ – 6′ long. Bracts small.

7. **L. glandulosa,** Walt. Smooth or pubescent; stem mostly simple, nearly leafless above; leaves thick, linear or linear-lanceolate, glandular-denticulate, sessile, the uppermost scattered and bract-like; racemes 1-sided, 3 – 9-flowered, the flowers distant; calyx smooth or hirsute, with linear glandular lobes; corolla (8″ – 10″ long) pale blue. — Pine-barren swamps, Florida, North Carolina, and westward. Oct. ♃ — Stem 2° – 4° long. Lower leaves 2′ – 4′ long.

8. **L. inflata,** L. Pubescent or hairy; stem leafy, branching from the base; leaves oblong, obtuse, toothed, sessile; racemes leafy below; corolla small,

pale blue; mature capsule ovoid, inflated. — Dry sterile soil in the upper districts, and northward. Aug. and Sept. ① or ② — Stem 1° – 1½° high. Corolla 2″–3″ long.

9. **L. spicata,** Lam. Closely pubescent; stem slender, simple; lowest leaves obovate or oblong, obtuse, denticulate; the upper ones small, lanceolate, scattered; flowers small, in a long and dense raceme, on short pedicels; corolla pale blue. (L. Claytoniana, *Michx.*) — Dry soil in the middle and upper districts, Mississippi, and northward. Aug. and Sept. ②? — Stem 1° – 2° high. Corolla 4″ – 5″ long.

10. **L. Nuttallii,** R. & S. Stem very slender, mostly simple, roughish; leaves small, entire; the lowest clustered, spatulate or obovate; the others distant, linear; flowers small, scattered in a long and slender raceme, on filiform pedicels which are longer than the bracts. (L. Kalmii, *Ell.*) — Low pine barrens, Georgia, and northward. Aug. and Sept. — Stem 1° – 1½° high. Corolla 3″ – 4″ long, pale blue.

11. **L. Boykinii,** Torr. & Gray. Smooth; stem slender, creeping at the base, sparingly branched above; leaves small (6″ long), subulate, scattered, the lowest scale-like; racemes loosely many-flowered, the filiform pedicels and slender calyx-lobes spreading; corolla (3″ – 5″ long) bright blue. — Margins of pine-barren ponds, Florida and Georgia. July – Sept. — Stem 2° high.

12. **L. paludosa,** Nutt. Smooth; stem mostly simple, nearly leafless; radical leaves fleshy, spatulate-lanceolate or linear, obtuse, crenulate; the others small, linear and remote; racemes slender, loose; bracts minute; corolla small, white or pale blue. — Pine-barren swamps, Florida to Mississippi, and northward. May – Aug. ♃ — Stem 2° – 4° high. Lowest leaves 3′ – 9′ long. Corolla ½′ long.

Order 74. GOODENIACEÆ. (Goodenia Family.)

Herbs or shrubs, with watery juice, alternate exstipulate leaves, and irregular flowers. — Calyx tubular, 3 – 5-lobed or entire, more or less adherent to the 1 – 4-celled ovary. Corolla irregular, unequally 5-lobed, induplicate in the bud; the tube split on one side, or 5-parted. Stamens 5, free from the corolla, the filaments and anthers rarely united. Style commonly single: stigma thick, surrounded with a cup-shaped mostly ciliate membrane. Fruit capsular or drupaceous. Embryo straight, in the axis of fleshy albumen.

1. SCÆVOLA, L.

Calyx 5-toothed. Corolla villous within, 5-lobed, with the lobes nearly equal and winged; the tube split on one side. Filaments and anthers free. Drupe 1 – 4-celled, the cells 1-seeded. — Herbs or shrubs. Leaves alternate. Peduncles axillary, dichotomous. Flowers blue or white.

1. **S. Plumieri,** Vahl. Shrubby, fleshy, smooth; leaves oblong-obovate, entire, bearded in the axils; peduncles shorter than the leaves; calyx tubular, truncate, obscurely 5-toothed; corolla thick, split to the base; stamens short; ovary 4-ovuled; drupe 2-celled, 2-seeded. — Sea-shore, South Florida.

ORDER 75. CAMPANULACEÆ. (CAMPANULA FAMILY.)

Herbs, with milky juice, alternate leaves, and regular mostly blue flowers. — Calyx 3–5-lobed, adherent to the ovary. Corolla 5-lobed, valvate in the bud. Stamens 5, free from the corolla, the broad filaments and anthers distinct. Style single, hairy above. Stigmas 2 or more. Capsule 2–several-celled, many-seeded, splitting at the apex, or opening by lateral valves or holes. Embryo straight in fleshy albumen.

1. CAMPANULA, L. BELLFLOWER.

Calyx 5-lobed. Corolla 5-lobed, mostly bell-shaped. Filaments dilated at the base. Stigmas 3, slender. Capsule short, 3-celled, opening by lateral valves. — Flowers spiked or panicled.

* *Flowers panicled, on slender spreading pedicels: corolla small* (3″–4″), *bell-shaped.*

1. **C. aparinoides,** Pursh. Stem weak, reclining, the angles, as also the margins and midrib of the linear nearly entire leaves, hispid backward; panicle few-flowered; calyx-lobes triangular; corolla white. (C. erinoides, *Muhl.*) — Swamps among the mountains, Georgia, and northward. July and August. — Stem 1°–1½° high. Lowest leaves narrowly obovate.

2. **C. divaricata,** Michx. Smooth; stem terete, paniculate above; the branches somewhat naked, spreading; leaves scattered, ovate-lanceolate, acuminate at each end, coarsely serrate; calyx-lobes subulate; style slightly exserted; corolla blue, nodding. — Mountains of Georgia and Carolina. July and August. — Stem 1°–2° high.

3. **C. flexuosa,** Michx. Branches erect; leaves lanceolate, the upper ones approximate; otherwise like the preceding. — Mountains of Carolina. *Michaux.* (*)

* * *Flowers spiked, single or* 2–3 *together: corolla large, somewhat wheel-shaped.*

4. **C. Americana,** L. Stem tall, smooth or hairy, mostly simple; leaves ovate-lanceolate, acuminate, serrate; spike elongated, leafy; corolla (1′ wide) blue. (C. acuminata, *Michx.*) — Dry rocky soil, Florida to Mississippi, and northward. Aug. and Sept. — Stem 2°–4° high. Spike 1°–2° long. Style exserted.

2. SPECULARIA, Heist.

Calyx 3–5-lobed. Corolla wheel-shaped, 5-lobed. Stamens free; the filaments membranaceous, hairy, shorter than the anthers. Stigmas 3. Capsule prismatic, 3-celled, opening by 3 lateral valves. — Low annuals. Flowers axillary. Corolla blue.

1. **S. perfoliata**, A. DC. Pubescent; stem angled, simple or branched; leaves round-cordate, crenate, clasping; the lowest narrowed at the base; flowers single or clustered, sessile, the lower ones apetalous. (Campanula, *L.*) — Fields, Florida to Mississippi, and northward. May – Aug. — Stem 1° high.

Order 76. ERICACEÆ. (Heath Family.)

Shrubs or small trees, rarely herbs, with undivided alternate exstipulate leaves, and regular flowers. — Calyx 4 – 5-parted. Corolla 4 – 5-parted or toothed, or 4 – 5-petalous, imbricated in the bud. Stamens free from the corolla, and as many or twice as many as its divisions: anthers 2-celled, often variously awned, opening commonly by terminal pores. Style 1: stigma entire or 3-lobed. Fruit 3 – 10-celled. Seeds anatropous, attached to a central placenta. Embryo small, in fleshy albumen.

Synopsis.

Suborder I. VACCINIEÆ. Calyx-tube adherent to the ovary. Corolla superior. Anther-cells prolonged into a slender tube. Fruit a berry. — Shrubs. Corolla monopetalous.

1. GAYLUSSACIA. Berry 8 – 10-celled; the cells 1-seeded. Anthers awnless.
2. VACCINIUM. Berry 4 - 5-celled, or partially 8 – 10-celled by false partitions, many-seeded.

Suborder II. ERICINEÆ. Calyx free from the ovary. Corolla hypogynous. Fruit a capsule. — Shrubs or small trees.

Tribe I. **ANDROMEDEÆ.** — Capsule loculicidally dehiscent.

* Anther-cells opening lengthwise. Corolla monopetalous.

3. EPIGÆA. Corolla salver-shaped. Leaves cordate.

* * Anther-cells opening at the apex. Corolla monopetalous.

4. GAULTHERIA. Calyx becoming berry-like in fruit. Anthers 4-awned at the apex.
5. LEUCOTHOË. Calyx imbricated in the bud. Valves of the capsule entire.
6. CASSANDRA. Calyx imbricated in the bud. Pericarp separating into two layers; the outer one 5-valved, the inner 10-valved.
7. ANDROMEDA. Calyx valvate in the early bud. Capsule globular. Seeds pendulous.
8. OXYDENDRUM. Calyx valvate in the bud. Capsule pyramidal. Seeds ascending.

* * * Anthers inverted in the bud, opening by terminal pores. Corolla 5-petalous.

9. CLETHRA. Stamens 10. Style 3-cleft. Capsule 3-celled, 3-valved.

Tribe II. **RHODOREÆ.** — Capsule septicidally dehiscent.

* Corolla monopetalous.

10. KALMIA. Corolla wheel-shaped, with 10 cavities in which the anthers are lodged.
11. MENZIESIA. Corolla (small) ovoid, 4-toothed. Stamens 8, included.
12. RHODODENDRON. Corolla (large) funnel or bell-shaped, 5-lobed. Stamens 5 or 10, exserted.

* * Corolla of 5 or 7 separate petals.

13. LEIOPHYLLUM. Corolla 5-petalous. Anthers opening lengthwise.
14. BEJARIA. Corolla 7-petalous. Anthers opening at the apex.

SUBORDER III. PYROLEÆ. Calyx free from the ovary. Corolla 5-petalous. — Low nearly herbaceous plants. Leaves evergreen.

* Capsule 5-celled.

15. PYROLA. Flowers racemose, on scape-like stems. Style filiform, elongated.
16. CHIMAPHILA. Flowers umbellate. Style very short, top-shaped.

* * Capsule 3-celled.

17. SHORTIA. Flower solitary, terminating the scape-like scaly stem.

SUBORDER IV. MONOTROPEÆ. Calyx of 4 – 5 scale-like or bract-like sepals. Corolla 5-lobed or 5-petalous. Seeds very minute. — Fleshy scaly herbs, parasitic on roots, and destitute of green foliage.

18. SCHWEINITZIA. Corolla monopetalous, bell-shaped, 5-lobed. Anthers 2-celled.
19. MONOTROPA. Corolla 4 - 5-petalous. Anthers kidney-shaped, opening across the top.

SUBORDER I. VACCINIEÆ. THE WHORTLEBERRY FAMILY.

1. GAYLUSSACIA, Kunth. HUCKLEBERRY.

Corolla tubular, ovoid, or bell-shaped, 5-cleft. Stamens 10 : anthers awnless. Fruit a berry-like drupe containing 10 seed-like nutlets. — Low branching mostly resinous-dotted shrubs, with white or reddish nodding flowers, in lateral bracted racemes.

1. **G. frondosa,** Torr. & Gray. Leaves entire, oblong or obovate, obtuse, rugose, glaucous, and, like the spreading branches, slightly pubescent; corolla small (2″), short-bell-shaped, reddish; berry depressed-globose, blue, glaucous ; bracts small, oblong. (Vaccinium frondosum, *Ell.*) — Low ground, Florida to Mississippi, and northward. April. — Shrub 1° – 2° high.

2. **G. dumosa,** Torr. & Gray. Branches and racemes pubescent ; leaves thick, oblong-obovate, serrulate, mucronate, soon smooth and shining; corolla (4″ long) bell-shaped, angled, white ; bracts ovate, leafy ; berry globose, smooth, black. (Vaccinium dumosum, *Ell.*) — Var. HIRTELLA. Stem taller (1° – 2° high) ; branches, leaves, and berries hirsute or hairy. — Low sandy pine barrens and swamps, Florida to Mississippi, and northward. April and May. — Shrub 6′ – 12′ high. Berry 4″ – 6″ in diameter.

3. **G. resinosa,** Torr. & Gray. Stem much branched ; leaves oblong or obovate, entire, coated, like the branchlets, &c., with resinous viscid globules ; racemes few-flowered ; bracts small, deciduous ; corolla small, ovoid or cylindrical, reddish ; berry black, smooth. (Vaccinium resinosum, *Ell.*) — Sandy woods in the upper districts of Georgia, and northward. April and May. — Shrub 2° – 3° high.

4. **G. ursina,** Gray. Leaves large (2′ – 3′ long), thin, lanceolate-oblong, acute, entire ; the veins, like the branches, rusty-tomentose ; racemes remotely few-flowered ; bracts minute ; corolla bell-shaped ; berry black. (Vaccinium ursinum, *M. A. Curtis.*) — Mountains of North Carolina. — Shrub 2° – 3° high.

2. VACCINIUM, L. Huckleberry. Blueberry.

Corolla cylindrical, urceolate, or campanulate, 4 – 5-toothed or parted. Stamens 8 – 10: anthers awnless, or 2-awned on the back; the cells prolonged into a tube, and opening at the apex. Berry 4 – 5-celled, or by false partitions 8 – 10-celled, many-seeded. — Shrubs. Flowers nodding, solitary, clustered, or racemed, white or reddish. Pedicels 2-bracted.

§ 1. Oxycoccus. — *Ovary 4-celled: corolla 4-parted, the narrow divisions recurved: stamens* 8: *anthers awnless: pedicels axillary, solitary.*

1. **V. macrocarpon,** Ait. Stems slender, creeping; leaves evergreen, small ($\frac{1}{2}'$ long), oblong, obtuse, pale or whitish beneath; pedicels longer than the leaves; corolla rose-color; berry large, red. — Cold mossy swamps, North Carolina, and northward. July. — Stems 1° – 2° long. Berry very sour, $\frac{1}{2}'$ in diameter.

2. **V. erythrocarpon,** Michx. Stem erect (2° – 4° high); leaves deciduous, oblong-ovate, acuminate, serrulate, hairy beneath; pedicels shorter than the leaves; flowers pale rose-color; berry small, red. — High mountains of North Carolina. July. — Branches flexuous. Berry insipid.

§ 2. Vitis-Idæa. — *Ovary 4 – 5-celled: corolla cylindrical or globose-campanulate, 4 – 5-toothed: stamens* 10: *anthers awnless: flowers in short bracted racemes: leaves persistent.*

3. **V. crassifolium,** Andr. Smooth; stems (1° – 2°) filiform, procumbent; leaves small (3″ – 7″), short-petioled, oval or oblong, thick and shining, the revolute margins entire or slightly serrulate; racemes short, cluster-like, few-flowered; corolla small, globose-campanulate, 5-toothed; berry black. (V. myrtifolium, *Michx.*) — Sandy pine-barren swamps, Georgia to North Carolina. April. — Corolla white or rose-color.

§ 3. Batodendron. — *Ovary more or less 10-celled by false partitions: corolla bell-shaped, 5-cleft: stamens* 10, *hairy: anthers 2-awned on the back: flowers in leafy racemes, seemingly axillary.*

4. **V. stamineum,** L. Tomentose; leaves deciduous, ovate or oblong, obtuse or slightly cordate at the base; often whitish beneath; anthers exserted; berry greenish, globose or pear-shaped. — Dry woods, Florida, and northward. May and June. — Shrub 3° – 10° high. Branches spreading. Corolla short, drying purplish.

5. **V. arboreum,** Michx. Arborescent, smoothish; leaves evergreen, oval or obovate, shining above; the veins beneath more or less pubescent; corolla large, angled, white; anthers included; berry globose, black. — Open woods, Florida to North Carolina. May. — Stem 8° – 15° high. Flowers very numerous. Berry mealy, ripening in the winter.

§ 4. Cyanococcus. — *Ovary more or less 10-celled by false partitions: corolla cylindrical, urceolate or obovate: stamens* 10, *hairy: anthers awnless: flowers in short small-bracted racemes or clusters.*

* *Leaves evergreen, small.*

6. **V. nitidum,** Andr.? Smooth and shining throughout; stem much branched; leaves obovate or oblong-obovate, acute, glandular-serrulate, punctate

beneath; calyx-teeth obtuse, and, like the pedicels and broadly oval bracts, reddish; corolla ovoid or obovate, white; berry somewhat pear-shaped, black. — Low pine barrens, Georgia and Florida. March and April. — Stem 1° – 2° high. Leaves ½′ long.

7. **V. myrsinites,** Michx. Stem much branched, pubescent; leaves lanceolate, oblong, or obovate, bristly-serrulate, shining above, paler beneath, glaucous when young; calyx-teeth acute, reddish, like the pedicels and oblong bracts; corolla cylindrical or obovate, white, purplish in the bud; berry globose, blue. — Sandy pine barrens, Florida to North Carolina, and westward. March and April. — Shrub 6′ – 18′ high. Leaves ½′ – 1′ long.

* * *Leaves deciduous.*

8. **V. tenellum,** Ait. Stem much branched; the spreading greenish branches pubescent; leaves oblong-obovate or oblanceolate, mucronate, acute at the base, slightly serrulate near the apex, pubescent when young; corolla oblong, white; calyx-teeth obtuse; bracts oblong-linear; berry globose, black or with a blue bloom. — Varies with the branches and leaves more pubescent, almost villous, and the calyx-teeth narrower and acute. (V. galezans, *Michx.*) — Margins of pine-barren swamps, Florida to North Carolina, and westward. April. — Shrub 1° – 3° high. Leaves ½′ – 1′ long, commonly thin and deciduous, but along its southern limits mostly coriaceous and persistent.

9. **V. Elliottii.** Stem tall, slender, with spreading branches; leaves distichous, ovate-lanceolate, very acute, bristly serrulate from the obtuse or rounded base, pubescent on the veins; clusters sessile, 2 – 4-flowered; corolla reddish, cylindrical, short-pedicelled; calyx-teeth triangular; berry mostly solitary, small, globose, black. (V. myrtilloides, *Ell.*, not of *Michx.*) — River-swamps, Florida to South Carolina. March. — Shrub 4° – 8° high; the branches smooth and mostly flexuous. Leaves ½′ – ¾′ long.

10. **V. corymbosum,** L. Stem tall (4° – 10°); leaves varying from ovate-lanceolate to broadly oval, entire or nearly so, pubescent when young, becoming smoothish especially above (1′ – 2′ long); racemes or clusters numerous, mostly on leafless branches; corolla cylindrical or oblong; berry globose, black or blue. — Margins of ponds and swamps, Florida, and northward. Feb. to April. — Varies greatly in the thickness, pubescence, and form of the leaves, and includes several nominal species.

11. **V. Constablæi,** Gray. Stem low (1° – 3°); leaves oval, pale, glaucous, glandular-mucronate, entire or obscurely serrulate, ciliate; racemes very short, sessile; corolla short-cylindrical; berry blue. — On the summit of Roan Mountain, North Carolina. July. — Leaves 1½′ – 2′ long. Racemes 5 – 10-flowered.

12. **V. hirsutum,** Buckley. Hirsute throughout; stem low (1° high), much branched; leaves ovate, entire, slightly mucronate; racemes short; corolla oblong, contracted at the apex, the teeth short; berry globose. — Mountains of Cherokee County, North Carolina. *Buckley.*

SUBORDER II. ERICINEÆ. THE HEATH FAMILY.

3. EPIGÆA, L. GROUND LAUREL.

Calyx deeply 5-parted, colored; the lobes acuminate. Corolla salver-shaped, 5-cleft. Stamens 10: anthers oblong, awnless, opening lengthwise. Capsule depressed-globose, 5-celled, many-seeded. — A prostrate shrubby plant, hispid with rust-colored hairs. Leaves evergreen, cordate-oval, entire, reticulated. Flowers in dense bracted racemes, white, fragrant.

1. **E. repens,** L. Dry sandy soil, Florida, and northward. Feb. and March. — Stem 6′ – 12′ long. Racemes shorter than the leaves.

4. GAULTHERIA, Kalm. WINTERGREEN.

Calyx 5-lobed, becoming berry-like in fruit. Corolla ovate, 5-toothed. Stamens 10: anther-cells 2-awned at the apex, opening by a terminal pore. Capsule enclosed in the berry-like calyx, depressed-globose, 5-celled, 5-valved, many-seeded. — Shrubs, with alternate leaves, and white or red flowers.

1. **G. procumbens,** L. Smooth; stem creeping; the short (3′ – 5′) branches erect, naked below; leaves oval or obovate, serrulate, shining; pedicels axillary, 1-flowered, nodding; fruiting calyx bright red. Shady woods and banks, especially among the mountains, North Carolina and northward. June. — Whole plant aromatic.

5. LEUCOTHOË, Don.

Calyx deeply 5-parted, imbricated in the bud, unchanged in fruit. Corolla ovate or cylindrical, 5-toothed. Stamens 10: anthers awnless, or the cells 1 – 2-awned at the apex, opening by a terminal pore. Stigma capitate. Capsule depressed-globose, not thickened at the sutures, 5-celled, 5-valved, many-seeded. Seeds pendulous. — Shrubs, with alternate leaves, and white flowers in axillary or terminal one-sided racemes.

* *Anthers awnless or nearly so: racemes axillary, shorter than the evergreen leaves.*

1. **L. axillaris,** Don. Leaves oval or oblong, abruptly acute, spinulose-serrulate toward the apex, on short petioles; racemes short, dense-flowered; calyx-lobes ovate, acute; anther-cells 2-horned. (Andromeda axillaris, *Lam.*) — Sandy swamps, and banks of streams in the lower districts, Florida to North Carolina, and westward. Feb. and March. — Stem and branches curving. Leaves 2′ – 4′ long.

2. **L. Catesbæi,** Gray. Leaves ovate-lanceolate, acuminate, spinulose-serrulate throughout, on conspicuous petioles; racemes dense-flowered; calyx-lobes ovate-oblong; anther-cells not horned. (Andromeda spinulosa, *Pursh.*) — Banks of streams along the mountains, Georgia and North Carolina. March and April. — Stem 2° – 4° high.

3. **L. acuminata,** Dunal. Stem tall, with straight and hollow branches; leaves ovate-lanceolate, acuminate, nearly entire; corolla cylindrical; anthers

gibbous near the base. — Margins of swamps, East Florida to South Carolina, *Elliott*, and mountains of North Carolina, *Curtis*. April. — Shrub 3° – 12° high. Leaves reticulated.

* * *Anther-cells* 1 – 2-*awned at the apex: racemes terminal, longer than the serrulate pubescent deciduous leaves: calyx bracted.*

4. **L. racemosa,** Gray. Branches and racemes straight; leaves ovate-lanceolate, acute, soon smooth; racemes long, single or somewhat paniculate; corolla cylindrical-ovate; anther-cells 2-awned; capsule not lobed. (A. racemosa, *L.*) — Margins of ponds and swamps, Florida to Mississippi, and northward. April and May. — Shrub 4° – 10° high.

5. **L. recurva,** Gray. Branches and racemes recurved; leaves ovate, acuminate, pubescent on the veins; racemes long, single; corolla cylindrical; anther-cells 1-awned; capsule 5-lobed. (Andromeda recurva, *Buckl.*) — Mountains of North Carolina, *Buckley*. April. — Shrub 3° – 4° high.

6. CASSANDRA, Don.

Calyx deeply 5-parted, imbricated in the bud, 2-bracted. Corolla cylindrical-oblong, 5-toothed. Stamens 10: anthers awnless, opening by terminal pores. Capsule depressed, 5-celled, many-seeded; the pericarp separating at maturity into 2 layers, the outer one 5-valved, the inner 10-valved. — A small shrub, with evergreen serrulate leaves, and solitary axillary nodding flowers.

1. **C. calyculata,** Don. Leaves oblong, mucronate, paler and scurfy beneath, the floral ones oval; flowers in the axils of the upper leaves, small, white; calyx-lobes ovate, acute. (Andromeda calyculata, *L.*) — Varies with the leaves and calyx-lobes narrower. (Andromeda angustifolia, *Pursh.*) — Swamps in the mountains of South Carolina, and northward. April. — Shrub 2° – 3° high. Leaves 1′ long.

7. ANDROMEDA, L.

Calyx deeply 5-parted, valvate in the early bud. Corolla 5-toothed. Stamens 10: anther-cells opening by a terminal pore. Capsule 5-celled, 5-valved, many-seeded. Seeds pendulous or spreading. — Shrubs. Leaves alternate. Flowers in lateral and terminal racemes or clusters, nodding.

* *Flowers in racemes: corolla ovoid or urn-shaped: anther-cells* 1-*awned on the back: leaves coriaceous, evergreen.*

1. **A. floribunda,** Pursh. Young branches, leaves, and racemes hirsute; leaves ovate-lanceolate, acute, bristly-serrulate; racemes dense-flowered, crowded in a terminal panicle; calyx-lobes ovate, acute. — Damp soil along the mountains. April. — Shrub 3° – 10° high. Flowers very numerous.

2. **A. phillyreæfolia,** Hook. Smooth; stem alternately leafy and bracted; leaves oblong or lanceolate-oblong, obtuse, glandular-serrate near the apex; racemes solitary, axillary, loosely 4 – 12-flowered; calyx-lobes lanceolate; corolla ovoid; capsule depressed-globose. — Shallow ponds in the pine barrens, chiefly near the coast, West Florida. January – March. — Shrub 1° – 2° high.

* * *Flowers in umbel-like clusters: capsule more or less ribbed at the sutures, the ribs separating at maturity.*

+– *Corolla ovate, cylindrical, or somewhat bell-shaped: anthers or filaments awned: capsule ovate, truncate: shrubs smooth throughout.*

3. **A. nitida,** Bartr. Branches 3-angled; leaves evergreen, ovate or oblong, entire, shining; clusters axillary, very numerous, 6 – 12-flowered; sepals lanceolate-ovate, spreading; corolla cylindrical-ovate, gibbous at the base; filaments 2-awned at the apex. — Low pine barrens, common. March – May. — Shrub 2° – 6° high. Corolla white, red, or purple, odorous.

4. **A. Mariana,** L. Leaves deciduous, oblong, obtuse or acute, entire; flowering stems commonly leafless; calyx-lobes lanceolate, acute, half as long as the large (½′ long) cylindrical white corolla; filaments 2-awned near the apex. — Damp soil near the coast, Florida, and northward. April and May. — Stem 2° – 4° high, often simple. Leaves 2′ – 3′ long.

5. **A. speciosa,** Michx. Leaves deciduous, oblong or elliptical, obtuse, serrate, often whitish beneath; flowering stems mostly leafless; calyx-lobes ovate, several times shorter than the large bell-shaped white corolla; anther-cells 2-awned at the apex. — Low pine barrens, Florida to North Carolina. — Shrub 3° – 4° high.

+– +– *Corolla small, nearly globular, scurfy: anthers and filaments awnless: capsule globose: shrubs pubescent, or scurfy.*

6. **A. ferruginea,** Walt. Branches and young leaves scurfy; leaves evergreen, obovate or lanceolate-obovate, rigid, at length smooth above and whitish beneath; the margins mostly revolute; clusters few-flowered. (A. rigida, *Pursh.*) — Low sandy pine barrens, Florida to South Carolina, and westward. — A low shrub or small tree. Branches very leafy, rigid. Leaves ½′ – 1′ long.

7. **A. ligustrina,** Muhl. Leaves deciduous, oblong or oblong-obovate, serrulate, acute, pubescent like the branches, paler beneath; clusters few-flowered, disposed in compound more or less leafy panicled racemes; filaments hairy, awnless. (A. frondosa, *Pursh.*, with racemes more leafy and the filaments slightly awned at the apex.) — Margins of swamps, Florida to Mississippi, and northward. May. — Shrub 3° – 4° high. Leaves 2′ long. Flowers very small.

8. OXYDENDRUM, DC. Sour-wood. Sorrel-tree.

Calyx 5-parted. Corolla ovate, 5-toothed. Stamens 10: anthers awnless, opening by terminal chinks; the cells acuminate. Capsule conical, 5-angled, 5-celled, many-seeded. Seeds ascending. — A small tree, with deciduous oblong serrulate acuminate leaves, on slender petioles, and white flowers in long and slender 1-sided terminal panicled racemes.

1. **O. arboreum,** DC. (Andromeda arborea, *L.*) — Rich woods, Florida to Mississippi, and northward. April and May. — Tree 15° – 40° high. Leaves 4′ – 6′ long, sour. Corolla pubescent.

9. CLETHRA, L.

Calyx 5-parted, imbricated in the bud. Corolla 5-petalous. Stamens 10: anthers obcordate, inverted in the bud, opening by terminal pores. Style slender, 3-cleft. Capsule 3-celled, 3-valved, many-seeded. — Shrubs or small trees. Leaves alternate, oblong or obovate, serrate, deciduous. Flowers white, in terminal racemes. Stamens and style exserted.

1. **C. alnifolia,** L. Shrubby; branches and racemes tomentose; leaves short-petioled, obovate or wedge-oblong, acute, smooth on both sides; racemes simple or panicled; style and filaments smooth; bracts partly persistent. (C. paniculata, *Pursh.*) — Varies, with the leaves hoary beneath, rough above (C. tomentosa, *Lam.*), or on both sides (C. scabra, *Pers.*); style hairy; bracts caducous. — Swamps, Florida to Mississippi, and northward. July. — Shrub 4° – 8° high. Leaves 2′ – 3′ long. Flowers fragrant.

2. **C. acuminata,** Michx. Arborescent; branches and racemes white-tomentose; leaves thin, smooth, ovate or ovate-lanceolate, acuminate, on slender petioles; racemes solitary; style smooth; filaments hairy. — Mountains of North Carolina. July and Aug. — Leaves 3′ – 4′ long. Bracts caducous.

10. KALMIA, L. Laurel.

Calyx 5-parted. Corolla depressed-campanulate or rotate, 5-lobed, with 10 cavities at the sides in which the anthers are lodged. Filaments elastic. Style single. Stigma capitate. Capsule globose, 5-celled, 5-valved, many-seeded. — Shrubs, with entire alternate opposite or whorled evergreen leaves, and showy white or rose-colored flowers.

* *Flowers in corymbs.*

1. **K. latifolia,** L. (Calico-bush.) Branches smooth; leaves mostly alternate, petioled, elliptical, acute at each end, green on both sides; corymbs terminal, viscid; corolla large, varying from white to deep rose-color. — Shady banks, Florida, and northward. May and June. — Shrub 4° – 10° high. Leaves shining.

2. **K. angustifolia,** L. (Sheep Laurel.) Branches smooth; leaves petioled, opposite or three in a whorl, narrowly oblong, obtuse, pale or glaucous beneath; corymbs lateral, glandular; flowers small, deep rose-color. — Barren hills, chiefly in the upper districts. April and May. — Shrub 2° – 3° high. Leaves and flowers smaller than those of the preceding.

3. **K. cuneata,** Michx. Branches pubescent; leaves sessile, alternate, wedge-oblong, pubescent beneath, bristle-pointed; corymbs lateral; flowers white. — Swamps, South and North Carolina, not common. — A small shrub.

* * *Flowers solitary, axillary.*

4. **K. hirsuta,** Walt. (Wicky.) Hirsute; stems low, very leafy; leaves small (½′ long), oblong or oval, mostly obtuse and alternate, the margins revolute; calyx-lobes leafy; flowers numerous, approximate, pale or deep rose-color; pedicels slender, longer than the leaves. — Flat pine barrens, Florida and Georgia. June to Sept. — Shrub 6′ – 18′ high.

11. MENZIESIA, Smith.

Calyx 4-toothed. Corolla ovoid, 4-toothed. Stamens 8, included: anthers awnless, opening by terminal pores. Stigma obtuse. Capsule woody, 4-celled, 4-valved, opening septicidally, many-seeded. — Shrubs, with entire alternate membranaceous leaves, and nodding greenish-white flowers in terminal clusters, appearing with the leaves.

1. **M. globularis,** Salisb. — Mountains of North Carolina. July. — A straggling shrub, 3° – 6° high. Leaves deciduous, oblong, acute, hairy, glaucous beneath, glandular-pointed.

12. RHODODENDRON, L. Rose-Bay. Honeysuckle.

Calyx mostly minute, 5-toothed. Corolla bell-shaped or funnel-shaped, usually somewhat irregular, 5-lobed. Stamens 5 or 10, mostly declined: anthers opening by terminal pores. Style single, elongated: stigma capitate. Capsule 5-celled, 5-valved, many-seeded. Seeds minute, scale-like. — Shrubs or small trees. Leaves alternate, entire. Flowers showy, in terminal clusters from large scaly buds.

§ 1. Azalea. — *Corolla funnel-shaped, mostly glandular-viscid externally: stamens 5: the long filaments and style exserted: leaves deciduous.*

* *Flowers appearing with or before the leaves.*

1. **R. nudiflorum,** Torr. Branchlets hairy; leaves obovate or oblong, pubescent, soon smoothish above; calyx-lobes minute; tube of the corolla finely pubescent, rather longer than the lobes; corolla white, varying to deep rose-color, or sometimes yellow. — Swamps and banks of streams, Florida to Mississippi, and northward. April and May. — Shrub 4° – 6° high. There are many varieties.

2. **R. calendulaceum,** Torr. Branchlets hairy; leaves oblong or obovate, hairy; calyx-lobes conspicuous; tube of the corolla hairy, shorter than the lobes. — Woods on the mountains of Georgia, and northward. May. — Shrub 3° – 10° high. Flowers flame-color, very showy.

* * *Flowers appearing after the leaves.*

3. **R. viscosum,** Torr. Branchlets bristly; leaves coriaceous, obovate, with the margins and veins beneath hirsute, green on both sides or glaucous beneath; corolla glandular-viscid, white; calyx-teeth minute, rounded. — Swamps, Florida to Mississippi, and northward. July and Aug. — Shrub 4° – 6° high. Capsule hispid.

4. **R. arborescens,** Torr. Branchlets smooth; leaves smooth, obovate, ciliate on the margins, pale beneath; corolla glandular-viscid, rose-color; calyx-lobes conspicuous, acute. — Mountains of Georgia, and northward. June. — Shrub 3° – 10° high. Flowers fragrant.

§ 2. Rhododendron. — *Corolla bell-shaped, smooth: stamens 10: leaves coriaceous, evergreen.*

5. **R. maximum,** L. Leaves obovate-oblong, abruptly acute, smooth and green on both sides; calyx-lobes conspicuous, rounded; corolla white or rose-

color, spotted within with yellow or green. — Shady banks of streams on the mountains of Georgia, and northward. July. — Stem 6° – 20° high. Leaves 4′ – 10′ long. Corolla 1′ in diameter.

6. **R. Catawbiense,** Michx. Leaves elliptic-oblong, obtuse at each end, mucronate, smooth; the young ones and branchlets tomentose; calyx-lobes small; corolla purple; pedicels and capsule rusty-pubescent. — Highest summits of the mountains of North Carolina. June. — Shrub 3° – 6° high. Leaves 3′ – 5′ long.

7. **R. punctatum,** Andr. Leaves elliptical, acute at each end, glabrous; the lower surface and dense corymbs thickly dotted with resinous globules; calyx-lobes small, rounded; corolla somewhat funnel-shaped, rose-color, spotted within, longer than the pedicels; capsule elongated. — Varies with smaller (1′ – 1½′) oval or obovate obtuse leaves, minute calyx-lobes, and shorter capsule (4″ – 5″ long). — Mountains of Georgia and North Carolina; the variety in the sandy pine barrens of West Florida. May and June. — Shrub 4° – 6° high. Leaves 2′ – 3′ long.

13. LEIOPHYLLUM, Pers.

Calyx 5-parted. Corolla of 5 spreading petals. Stamens 10, exserted: anthers opening lengthwise. Style filiform. Capsule 3-celled, 3-valved, many-seeded. — A low, smooth, much branched shrub, with very numerous thick, oval, entire evergreen leaves, and small white flowers in terminal clusters.

1. **L. buxifolium,** Ell. — Sandy pine barrens, and on the mountains of Carolina. May. — Shrub 6′ – 10′ high. Leaves ½′ long, alternate or opposite, glossy.

14. BEJARIA, Mutis.

Calyx 7-lobed or 7-toothed. Corolla of 7 oblong spreading petals. Stamens 14: anthers versatile, opening by terminal pores. Style elongated: stigma depressed. Capsule depressed-globose, 7-celled, 7-valved, many-seeded. — Shrubs, with alternate entire coriaceous leaves, and white or purple flowers in racemes or corymbs.

1. **B. racemosa,** Vent. Branches rough with scattered rigid hairs; leaves ovate-lanceolate, smooth; racemes terminal, elongated; calyx 7-toothed. — Dry sandy soil, Georgia and East Florida. June and July. — Shrub 3° – 4° high. Flowers white, showy.

Suborder III. PYROLEÆ. The Pyrola Family.

15. PYROLA, L.

Calyx 5-parted. Petals 5, concave, deciduous. Stamens 10: anthers somewhat 4-celled, opening by terminal pores, inverted in the bud. Style long, mostly declined: stigma 5-lobed or 5-rayed. Capsule globose, 5-celled, 5-valved, opening through the cells from the base upward; the sutures pubescent. Seeds

very minute, numerous. — Smooth perennial herbs, with creeping roots, and evergreen radical leaves. Flowers commonly white, nodding, in a simple raceme at the summit of the nearly naked scape.

1. **P. rotundifolia,** L. Leaves orbicular, thick, nearly entire, shorter than the petioles; racemes many-flowered; stigma 5-crenate. — Dry woods in the mountains, Georgia, and northward. June and July. — Scape 1° high.

16. CHIMAPHILA, Pursh. Prince's Pine.

Calyx 5-cleft. Petals 5, spreading, deciduous. Stamens 10, the filaments dilated in the middle: anthers somewhat 4-celled, opening by terminal pores, inverted in the bud. Stigma broad, 5-crenate, nearly sessile. Capsule globose, opening from the apex downward; the sutures naked. — Low creeping evergreens, with erect branches, lanceolate serrate whorled leaves, and whitish umbellate nodding flowers on long peduncles.

1. **C. umbellata,** Nutt. Leaves wedge-lanceolate, narrowed at the base, serrate above the middle, not spotted; umbels 4 – 7-flowered; filaments smooth. — Open woods, North Carolina, and northward. June. — Branches 6′ – 10′ high. Leaves glossy.

2. **C. maculata,** Pursh. Leaves lanceolate, broad at the base, toothed-serrate throughout, blotched with white; umbels 2 – 5-flowered; filaments villous below. — Dry open woods in the middle and upper districts, Mississippi, and northward. June. — Smaller than the preceding.

17. SHORTIA, Gray.

Calyx 5-sepalous, scale-like, imbricated in the bud. Capsule shorter than the calyx, nearly globose, 3-celled, loculicidally 3-valved. Placenta large, central. Seeds small, numerous. Embryo terete, straight, shorter than the albumen. Style filiform, somewhat persistent. Corolla and stamens unknown. — A smooth perennial nearly stemless herb. Leaves roundish, subcordate, crenate-serrate, long-petioled. Scape scaly-bracted towards the summit, 1-flowered.

1. **S. galacifolia,** Gray. — High mountains of Carolina, *Michaux.*

Suborder IV. MONOTROPEÆ. The Indian-Pipe Family.

18. SCHWEINITZIA, Ell.

Calyx of 5 sepals, persistent. Corolla persistent, bell-shaped, 5-lobed. Stamens 10: anthers shorter than the filaments, fixed near the apex, awnless; the cells opening at the apex. Style short and thick: stigma large, 5-angled. Capsule ovoid, 5-celled. Seeds very numerous. — Stem low (3′ – 4′), smooth, brownish, scaly. Spike several-flowered. Flowers flesh-colored, odorous.

1. **S. odorata,** Ell. — Shady woods, North Carolina, and northward, rare. April. — Parasitic on the roots of herbs. Flowers nodding.

19. MONOTROPA, L. Indian-Pipe.

Calyx of 2 – 5 deciduous sepals. Corolla 4 – 5-petalous, gibbous at the base, deciduous. Stamens 8 – 10: anthers reniform, opening across the apex. Stigma broad, 4 – 5-rayed. Capsule ovoid, 8 – 10-furrowed, 4 – 5-celled. Seeds very numerous, minute. — Stems low, fleshy, white or reddish, scaly. Flowers solitary or racemose, nodding. Capsules erect. Herbs parasitic on roots, or decayed vegetable matter.

§ 1. Monotropa, Nutt. — *Stem 1-flowered: sepals* 2 – 4 : *petals* 5 : *anthers opening by* 2 *chinks: style short and thick.*

1. **M. uniflora,** L. — Shady woods, Florida to Mississippi, and northward. Aug. and Sept. — Stem smooth, 4′ – 10′ high, white, turning black in drying. Flower showy.

§ 2. Hypopitys, Dill. — *Stem several-flowered; the upper flower commonly with* 5 *petals and* 10 *stamens; the others with* 4 *petals and* 8 *stamens: sepals as many as the petals: anthers opening by* 2 *unequal valves; the smaller one erect: style longer than the ovary.*

2. **M. Hypopitys,** L. (M. lanuginosa, *Michx.*) — Shady woods, Florida to Mississippi, and northward. Aug. — Stems 4′ – 8′ high, pubescent, reddish.

Order 77. GALACINEÆ. (Galax Family.)

Calyx small, 5-sepalous, persistent. Petals 5, hypogynous, obovate-spatulate, deciduous. Stamens hypogynous; the filaments united into a 10-toothed tube; those opposite the petals sterile, the 5 alternate ones shorter and bearing a roundish 1-celled anther, which opens across the top. Style short: stigma 3-lobed. Capsule ovoid, 3-celled, loculicidally 3-valved. Seeds numerous, fixed to the central placenta. Embryo straight, in fleshy albumen. — A smooth perennial stemless herb, erect from a creeping scaly rhizoma. Leaves all radical, evergreen, round-cordate, crenate, petioled. Scape (1° – 2° high) simple, bearing a long spiked raceme of small white flowers.

1. GALAX, L.

Characters of the order.

1. **G. aphylla,** L. — Open woods on the mountains of North Carolina. June and July. — Rhizoma deep red.

Order 78. AQUIFOLIACEÆ. (Holly Family.)

Trees or shrubs, with alternate simple leaves, and small white or greenish flowers. — Calyx 4 – 9-toothed. Corolla hypogynous, rotate, 4 – 9-

parted, imbricated in the bud. Stamens 4 – 9, alternate with the lobes of the corolla, and inserted on its base: anthers opening lengthwise. Ovary free from the calyx, 4 – 9-celled. Stigma lobed, nearly sessile. Drupe berry-like, composed of 4 – 9 one-seeded nutlets. Seeds anatropous, suspended. Embryo minute, in fleshy albumen.

1. ILEX, L. Holly.

Flowers perfect or dicœciously polygamous, of 4 – 9 parts. Drupe containing 4 – 9 nutlets. — Leaves evergreen or deciduous. Fertile flowers commonly solitary on the young branches, the sterile ones mostly in sessile or peduncled clusters or cymes.

§ 1. Aquifolium. — *Parts of the flower* 4: *drupe red: nutlets ribbed or veiny on the back: leaves evergreen.*

1. **I. opaca,** Ait. (Holly.) Smooth; leaves oval, concave, wavy and spiny on the margins; sterile flowers cymose, on slender peduncles; calyx-lobes acute. — Sandy soil, Florida to Mississippi, and northward. April and May. — A small tree.

2. **I. Dahoon,** Walt. Young branches, lower surface of the leaves, and clusters more or less pubescent; leaves varying from obovate to oblong-linear, acute or obtuse, mucronate, entire, or sharply serrate above the middle, on short petioles; sterile peduncles many-flowered, the fertile ones shorter, and mostly 1-flowered; calyx-teeth acute; nutlets 3-ribbed on the back. (I. laurifolia, *Nutt.* I. ligustrina, *Ell.*) — Var. myrtifolia. Leaves small ($\frac{1}{2}'$ – $1'$), linear-oblong, entire, or, on the young branches, sharply 2 – 4-toothed toward the apex. (I. myrtifolia, *Walt.*) — Margins of swamps and pine-barren ponds, South Florida to North Carolina, and westward. April and May. — A handsome shrub or small tree. Leaves $2'$ – $3'$ long.

3. **I. Cassine,** L. (Yaupon.) — Leaves small ($\frac{1}{2}'$ – $1'$ long), oval or oblong, obtuse, crenate; clusters very numerous, nearly sessile; calyx-lobes minute, obtuse. — Light sandy soil along the coast, Florida to North Carolina. April. — Shrub 8° – 12° high, slender, the short spreading branches often spine-like. Fruit clustered, abundant.

§ 2. Prinoides. — *Parts of the flower* 4 – 6: *drupe red or purple: nutlets* 4 – 6, *ribbed on the back: shrubs: leaves deciduous.*

4. **I. decidua,** Walt. Leaves lanceolate or oblong, obtusely serrate, pubescent on the veins beneath, tapering into a short petiole; flowers on short pedicels, in sessile clusters; calyx-teeth smooth, acute. (I. prinoides, *Ait.*) — Varies with the leaves smooth on both sides, and the flowers on longer pedicels. — River-swamps, Florida to Mississippi, and northward. April and May. — A large shrub. Leaves thin, $1'$ – $2'$ long. Drupe red.

5. **I. ambigua.** Branches slender; leaves oval or oblong, acute or somewhat acuminate, finely and sharply serrate, smooth on both sides, or rarely, like the branchlets, softly pubescent; pedicels of the sterile flowers clustered, longer than the petioles; those of the fertile ones very short, solitary; calyx-teeth ob-

tuse, ciliate. (I. monticola, *Gray?*) — Sandy margins of swamps, Florida, and northward. April. — A shrub or small tree. Leaves 1′ – 4′ long.

6. **I. Amelanchier,** M. A. Curtis. Leaves oblong, barely acute at each end, serrulate, pubescent and finely reticulate beneath; fruiting pedicels solitary, as long as the petioles; drupe large, red; nutlets strongly 3-ribbed on the back; calyx-teeth acute. — Swamps, Society Hill, South Carolina, *Curtis.* — Leaves about 2′ long, 1′ wide. Drupe 3″ – 4″ in diameter.

§ 3. PRINOS. — *Parts of the flower mostly* 6 – 9 : *nutlets smooth and even on the back.*

* *Leaves deciduous : drupe red.*

7. **I. verticillata,** Gray. Leaves (thick) oval, obovate, or wedge-lanceolate, acuminate, rather coarsely serrate, paler and pubescent beneath; flowers all clustered, 6-parted, on short pedicels; fruit abundant. (Prinos verticillatus, *L.*) — Low ground, West Florida, and northward. April. — A large shrub. Leaves about 2′ long. Pedicels shorter than the petioles.

8. **I. lanceolata.** Leaves lanceolate, finely and remotely serrate, acute at each end, smooth on both sides, membranaceous; fertile flowers scattered generally in pairs, 6-parted; sterile ones clustered, triandrous; drupes small. (Prinos lanceolatus, *Pursh.*) — Lower districts of Georgia and South Carolina, *Pursh.* June. (*)

* * *Leaves smooth, evergreen : drupe black.*

9. **I. glaber,** Gray. Leaves wedge-oblong or obovate, crenately 2 – 4-toothed near the apex; sterile peduncles many-flowered; the fertile, 1-flowered; flowers all 6 – 9-parted. (Prinos glaber, *L.*) — Low pine barrens, Florida to Mississippi, and northward. May. — Shrub 2° – 4° high.

10. **I. coriacea.** Leaves oval or oblong-obovate, entire or with sharp scattered teeth, viscid when young; peduncles 1-flowered, the sterile ones mostly clustered, the fertile solitary; flowers 6 – 9-parted. (Prinos coriaceus, *Ell.*) — Wet thickets, Florida, Georgia, and westward. May. — Shrub 4° – 8° high.

ORDER 79. STYRACACEÆ. (STORAX FAMILY.)

Trees or shrubs. Leaves alternate, without stipules. Flowers perfect. — Calyx 4 – 8-toothed, or entire, free, or adherent to the 2 – 5-celled ovary. Corolla hypogynous, or inserted on the calyx, 4 – 8-lobed or 4 – 8-petalous. Stamens inserted on the base of the corolla, twice as many as its divisions, or more numerous, separate, or monadelphous or polyadelphous at the base. Style single. Fruit capsular or drupaceous, 1 – 5-celled. Seeds anatropous, mostly solitary in each cell. Embryo nearly as long as the albumen. Cotyledons flat. Radicle slender.

TRIBE I. **STYRACEÆ.** Calyx 4 – 8-toothed, or entire : stamens 2 – 4 times as many as the divisions of the corolla : ovules partly erect or spreading, and partly pendulous : pubescence stellate.

1. STYRAX. Fruit capsular, 1-celled. Ovary free from the calyx, or partly adherent.
2. HALESIA. Fruit drupaceous, 2 – 4-winged, 2 – 4-celled. Ovary wholly united with the calyx.

TRIBE II. **SYMPLOCINEÆ.** Calyx 5-cleft: stamens indefinite: ovules pendulous: pubescence simple.

3. SYMPLOCOS. Flowers in sessile clusters. Fruit baccate.

1. STYRAX, Tourn. STORAX.

Calyx 5 - 8-toothed, free, or partly adherent to the 3-celled ovary. Corolla deeply 5-parted, with spreading or reflexed lobes, hypogynous or perigynous. Stamens 10, free or adnate to the tube of the corolla. Style filiform. Ovary completely or partly 3-celled. Capsule globose, 3-valved, 1-seeded. — Shrubs, with a downy or scurfy stellate pubescence. Leaves entire or toothed. Flowers white, in leafy racemes.

1. **S. pulverulentum,** Michx. Leaves small ($1' - 1\frac{1}{2}'$ long), elliptical or obovate, entire or toothed, the lower surface and branches scurfy; racemes lateral, 3 - 7-flowered, often by pairs, hoary; calyx-teeth subulate. — Pine-barren swamps, Florida and Georgia. April and May. — Shrub $2° - 12°$ high. Racemes $1' - 2'$ long. Flowers fragrant.

2. **S. grandifolium,** Ait. Leaves large ($2' - 4'$ long), oval or obovate, acute, mostly entire; the lower surface, like the branches and many-flowered racemes, hoary; calyx furrowed, with triangular acute teeth. — Rich woods, Florida to North Carolina, and westward. April and May. — Shrub $4° - 6°$ high. Racemes $3' - 5'$ long.

3. **S. Americanum,** Lam. Leaves thin, obovate, or oblong-obovate, acute, smooth; racemes scurfy, not hoary, 4 - 6-flowered, terminal; calyx-teeth short, subulate. (S. glabrum and S. lævе, *Ell.*) — Banks of streams, in the middle and upper districts, Mississippi to North Carolina. May. — Shrub $4° - 8°$ high. Leaves $1' - 2'$ long. Racemes $1'$ long.

2. HALESIA, Ellis. SNOWDROP-TREE.

Calyx obconical, slightly 4 - 8-toothed, adnate to the 3 - 4-celled ovary. Corolla inserted on the calyx, 4-lobed or 4-petalous. Stamens 8 - 16, separate or united below, free from the corolla: anthers linear. Ovules 4 in each cell, 2 of them erect, and 2 pendulous. Drupe dry, 2 - 4-winged, 1 - 3-seeded. Seeds cylindrical. — Shrubs or small trees. Leaves ample. Flowers in short lateral racemes, appearing with the leaves, white, drooping.

* *Ovary 3-celled: corolla 4-petalous: stamens mostly* 8, *distinct: drupe 2-winged.*

1. **H. diptera,** L. Leaves oval, coarsely serrate, pubescent, $4' - 5'$ long; racemes 2 - 4-flowered, the flowers on long pedicels; corolla $1'$ long; anthers spreading; drupe compressed, $1'$ long. — Rich woods, Florida and Georgia. March and April.

* * *Ovary 4-celled: corolla 4-lobed: stamens mostly* 12, *united below the middle: drupe 4-winged.*

2. **H. tetraptera,** L. Leaves oblong, finely serrate, at length smoothish, $2' - 4'$ long; flowers 2 - 4 in a cluster, $8'' - 10''$ long; anthers erect. — River-banks, Florida to North Carolina, and westward. March and April.

3. **H. parviflora,** Michx. Leaves ovate-oblong, acute, pubescent on both sides, glaucous beneath, slightly toothed, when young entire; racemes somewhat compound, 4 – 5-flowered, leafy; pedicels longer than the flowers; calyx tomentose; the teeth ovate, acute; corolla small, tomentose, 4-parted; stamens 8; drupe slightly and unequally winged. — In Florida, *Michaux.* — Leaves 2′ long. Corolla 10″ long. (*)

3. SYMPLOCOS, Jacq.

Calyx 5-cleft, more or less adherent to the 2 – 5-celled ovary. Corolla 5 – 10-petalous. Stamens 15 or more, monadelphous or polyadelphous, inserted at the base of the corolla: anthers roundish. Ovules 2 – 4 in each cell, suspended, anatropous. Style slender: stigma entire or 3 – 5-parted. Berry 1 – 5-seeded. — Trees or shrubs. Leaves alternate, serrate. Flowers axillary, in racemes or clusters.

1. **S. tinctoria,** L'Her. Leaves smooth, coriaceous, oblong, partly persistent; clusters sessile, 6 – 12-flowered; calyx smooth, top-shaped, the lobes obtuse; corolla yellow; stamens in 5 sets; stigma entire, berry 1-seeded. — Low woods and banks of streams, Florida to North Carolina, and westward. March. — A small tree. Leaves 3′ – 4′ long, sweetish. Flowers very numerous.

Order 80. CYRILLACEÆ. (Cyrilla Family.)

Trees or shrubs, with alternate evergreen leaves, without stipules, and perfect white flowers in lateral or terminal racemes. — Calyx of 4 – 5 sepals. Petals 5 – 8, hypogynous, imbricated in the bud. Stamens 5 – 10, inserted with the petals: anthers introrse, opening lengthwise. Ovary 2 – 4-celled, with a single suspended ovule in each cell. Stigma entire or 2 – 4-lobed. Fruit 2 – 4-seeded. Embryo straight in the axis of fleshy albumen. Radicle superior.

1. CYRILLA, Garden.

Calyx small, 5-sepalous, persistent. Corolla 5-petalous, spreading, deciduous. Stamens 5, opposite the sepals, subulate, spreading: anthers oval. Style persistent: stigma 2-lobed. Drupe ovate, 2-celled, 2-seeded; the pericarp spongy. — A smooth shrub or small tree. Leaves entire. Racemes clustered at the base of the branches of the season, rigid, spreading. Flowers small, on short 2-bracted pedicels.

1. **C. racemiflora,** Walt. Leaves oblong or obovate-oblong (2′ – 4′ long), on short petioles; racemes straight, many-flowered; drupe dry, ovate, tipped with the conspicuous slender style, mostly 1-seeded. — Varies with smaller (1′ – 1½′) oblanceolate and more rigid leaves, and the nearly globose drupe tipped with the short and thick style. — Shady banks, and (the variety) in pine-barren ponds, Florida to North Carolina, and westward. July. — Racemes 3′ – 6′ long.

2. CLIFTONIA, Banks. Titi.

Calyx minute, composed of 5 – 8 scale-like persistent sepals. Petals 5 – 8, obovate, concave, short-clawed, spreading. Stamens mostly 10, in 2 rows; the filaments erect, thick, contracted above the middle; those opposite the petals longer: anthers round. Stigma sessile, 3 – 4-lobed. Drupe dry, 3 – 4-winged, 3 – 4-celled, with a single linear seed in each cell. — A shrub or small tree. Leaves oblong, smooth, and somewhat glaucous. Racemes terminal, many-flowered, with leafy deciduous bracts. Drupes nodding.

1. **C. ligustrina,** Banks. (Mylocarium, *Willd.*) — Pine-barren ponds and swamps, Florida, and the lower districts of Georgia, westward. March and April. — Leaves 2′ long. Racemes 2′ – 4′ long. Flowers white, fragrant.

3. ELLIOTTIA, Muhl.

Calyx minute, 4-sepalous. Petals 4, oblong-linear, slightly adhering at the base. Stamens 8, included: anthers sagittate, thickened at the apex. Style slender, slightly exserted: stigma capitate. Ovary 4-celled, the cells many-ovuled. Fruit unknown. — A smooth shrub, 4° – 10° high. Leaves elliptical-lanceolate, acuminate at each end, glaucous beneath. Racemes terminal, bractless, simple or compound.

1. **E. racemosa,** Muhl. — Near Waynesboro', Georgia, *Elliott.* — June.

Order 81. EBENACEÆ. (Ebony Family.)

Trees or shrubs, with watery juice. Leaves alternate, entire, without stipules. Flowers polygamous; the sterile cymose; the fertile ones larger, solitary. — Calyx free from the 3 – 12-celled ovary, persistent, 3 – 7-lobed. Corolla 3 – 7-lobed, imbricated in the bud, deciduous. Stamens mostly 16, inserted on the base of the corolla, often united by pairs; the filaments short and hairy: anthers introrse. Ovules 1 – 2 in each cell, anatropous, suspended. Styles distinct, or united below. Fruit baccate, roundish, few-seeded; the seeds large, compressed. Embryo in the axis of hard albumen. Radicle superior.

1. DIOSPYROS, L. Persimmon.

Calyx 4 – 6-lobed. Corolla bell-shaped, 4 – 6-cleft. Stamens in the sterile flower mostly 16; in the fertile 8, with the anthers sterile. Styles 2 or 4, united below. Ovules solitary in the cells. Berry 4 – 8-seeded.

1. **D. Virginiana,** L. Leaves ovate-oblong, mostly smooth, petioled; calyx 4-parted; corolla 4-cleft; styles 4, each 2-lobed; ovary 8-celled. — Woods and old fields, Florida to Mississippi, and northward. May and June. — A small tree. Flowers greenish. Berry eatable when fully ripe.

Order 82. SAPOTACEÆ. (Sapodilla Family.)

Trees or shrubs, with milky juice, alternate entire exstipulate short-petioled leaves, and regular perfect (small) flowers, commonly in sessile axillary clusters. — Calyx free from the 3 – 12-celled ovary, 4 – 8-parted, persistent. Corolla hypogynous, 4 – 8-cleft, mostly with one or two appendages between each lobe. Fertile stamens as many as the lobes of the corolla and opposite them, alternating with as many scale-like or petal-like sterile ones, inserted on the tube of the corolla: anthers extrorse. Ovules anatropous, single, suspended from the central angle of each cell, or ascending from its base. Fruit a drupe or berry. Seeds few. Albumen fleshy or oily, or none. Embryo straight.

Synopsis.

* Calyx 5-parted.

+ Corolla with a single appendage between the lobes.

1. SIDEROXYLON. Sterile stamens none. Fruit a drupe. Albumen copious.

+ + Corolla with two appendages between the lobes.

2. DIPHOLIS. Seed with copious albumen. Sterile stamens fimbriate. Ovary smooth.

3. BUMELIA. Seed without albumen. Sterile stamens entire. Ovary hairy.

* * Calyx 6 – 8-parted.

4. MIMUSOPS. Appendages of the corolla two between the lobes. Stamens 6 – 8.

1. SIDEROXYLON, L.

Calyx 4-parted. Corolla 5-cleft, with a single appendage between the lobes. Stamens 5, the sterile ones none. Ovary hairy, 5-celled. Drupe mostly 1-celled, 1-seeded. Albumen copious. — Tropical trees. Flowers clustered.

1. **S. pallidum,** Spreng. Smooth; leaves membranaceous, elliptical, obtuse, wavy on the margins, on slender petioles; clusters few-flowered; drupes purplish, ovoid. — South Florida. — Leaves 5′ - 6′ long. Drupe 9″ long.

2. DIPHOLIS, A. DC.

Calyx 5-parted. Corolla 5-cleft, with two toothed appendages between the lobes. Stamens 5, each alternating with an ovate-lanceolate fimbriate sterile one. Ovary smooth. Berry juiceless, 1-seeded. Albumen copious, fleshy. — A small tree, with silky branches. Leaves smooth, oblong-lanceolate, obtuse, narrowed into a short petiole. Flowers clustered, on short pedicels.

1. **D. salicifolia,** A. DC. — South Florida, *Dr. Blodgett.* Leaves 2′ - 3′ long. Calyx silky. Drupe small, oblong.

3. BUMELIA, Swartz.

Calyx 5-parted. Corolla 5-cleft, with two appendages between the lobes. Stamens 5, each alternating with a petal-like sterile one. Ovary 5-celled, hairy.

Berry ovoid, 1-seeded. Albumen none. — Spiny shrubs, with hard wood. Leaves deciduous, oblong, narrowed into a petiole. Flowers clustered, white or greenish.

1. **B. lycioides,** Gært. Leaves obovate-oblong, smooth on both surfaces; clusters many-flowered, smooth; pedicels twice as long as the flower, rather shorter than the petioles; corolla nearly twice the length of the calyx. — River-banks, Florida to North Carolina, and westward. June and July. — A large shrub or small tree. Leaves 2′–4′ long. Flowers greenish. Berry ovoid.

2. **B. tenax,** Willd. Leaves oblanceolate or obovate-oblong, thin, the lower surface, like the branchlets and many-flowered clusters, covered with silky brown hairs; pedicels three times as long as the flower, shorter than the petioles; corolla white, barely longer than the calyx. — Dry soil, South Carolina, and westward; not common. — Leaves $1\frac{1}{2}'$–$2\frac{1}{2}'$ long. Berry oval.

3. **B. lanuginosa,** Pers. Leaves obovate-oblong or obovate, coriaceous, the lower surface, like the branchlets and many-flowered clusters, covered with a dense rusty villous pubescence; corolla white, twice as long as the calyx. — Dry sandy soil, Florida to South Carolina, and westward. June and July. — A shrub or small tree. Leaves 2′–3′ long. Berry small, ovoid.

4. **B. reclinata,** Vent. Smooth; branches diffuse; leaves obovate, often emarginate; clusters few-flowered. — Varies with the branchlets, leaves, and clusters sprinkled with appressed silky fulvous hairs; flowers smaller. — River-banks, Florida to South Carolina. June and July. — Shrub 3°–4° high. Leaves 1′–2′ long. Flowers white. Berry globose.

5. **B. parvifolia,** A. DC. Smooth throughout; lateral branches short and spine-like; leaves small, coriaceous, lanceolate-spatulate or oblong-obovate, obtuse, clustered; flowers few in a cluster, on short pedicels; calyx-lobes ovate, obtuse, the two outer ones smaller; corolla yellowish-white; berry large, oblong. (B. angustifolia, *Nutt.*) — South Florida. — A small tree. Leaves 1′ long. Berry 3″–4″ long.

4. MIMUSOPS, L.

Calyx 6–8-parted; the lobes in two rows. Corolla 6–8-cleft, with 2 appendages between the lobes. Stamens 6–8, with as many 2-lobed sterile ones interposed. Ovary 6–8-celled, hirsute. Berry globose, 1–2-celled. Albumen fleshy. — Trees or shrubs. Leaves coriaceous, clustered at the summit of the branches. Flowers axillary, white.

1. **M. Sieberi,** A. DC. Branches short, thick, tubercular; leaves rigid, smooth, oblong, emarginate at the apex, obtuse at the base, on stout petioles; pedicels as long as the petiole, recurved; calyx-lobes coriaceous, ovate-lanceolate, pubescent, as long as the corolla. — South Florida. — Leaves 2′–3′ long; the midrib stout, the lateral veins obscure.

Order 83. THEOPHRASTACEÆ. (Theophrasta Family.)

Trees or shrubs, with watery juice. Leaves coriaceous, often resinous-dotted, without stipules. Flowers perfect, thick, white, orange, or red. — Calyx 5-parted. Corolla 5-cleft, with a single appendage between the lobes. Stamens 5, fertile, opposite the lobes of the corolla: anthers extrorse, 2-celled, the thickened connective prolonged above the cells. Ovary free, 1-celled, many-ovuled. Placenta central, globose. Stigma capitate. Fruit globose. Seeds few, enclosed in gelatinous pulp. Embryo in the axis of copious albumen. Radicle inferior.

1. JACQUINIA, L.

Calyx-lobes obtuse. Corolla bell-shaped, with ovate obtuse appendages. Stamens inserted on the base of the corolla: filaments broad and flat. Style cylindrical from a conical base: stigma capitate, 5-angled. Berry pointed, 3 – 10-seeded. Albumen hard. — Leaves entire, short-petioled. Flowers in racemes.

1. **J. armillaris,** Jacq.? Branches puberulent; leaves wedge-obovate, smooth, emarginate, 3-nerved, punctate, short-petioled, the margins revolute; racemes chiefly terminal, somewhat fleshy, many-flowered, rather longer than the leaves; bracts ovate; pedicels erect, club-shaped; corolla short, bell-shaped, fleshy, the tube shorter than the rounded lobes; stamens short; the filaments dilated and connate at the base, lining the base of the corolla; fruit subglobose. — South Florida. — Leaves $1' - 1\frac{1}{2}'$ long. Fruit $5''$ in diameter, orange-red.

Order 84. MYRSINACEÆ. (Myrsine Family.)

Trees or shrubs, often glandular-dotted, with alternate exstipulate mostly entire leaves, and regular, often monœcious or diœcious, white or rose-colored flowers. — Calyx 4 – 6-parted. Corolla 4 – 6-cleft. Stamens 4 – 6, opposite the lobes of the corolla: anthers 2-celled, introrse. Ovary mostly free, 1-celled, smooth: ovules 1 – many, imbedded in the cavities of the central placenta. Style simple. Fruit drupaceous, globose, somewhat fleshy, commonly 1-seeded. Seeds roundish, concave at the base. Embryo transverse, in hard albumen.

1. MYRSINE, L.

Flowers polygamo-diœcious. Calyx 4 – 5-parted. Corolla 4 – 5-cleft, imbricated in the bud. Stamens 4 – 5, inserted on the base of the corolla: anthers longer than the filaments, opening from the base upward. Style short: stigma capitate. Ovules 4 – 5, amphitropous. Drupe globose, 1-seeded. — Leaves coriaceous. Flowers small, in axillary clusters, on short pedicels.

1. **M. Floridana,** A. DC. Smooth; leaves obovate-oblong, entire, on short petioles; clusters few-flowered; lobes of the calyx and corolla 5; drupes small, longer than the pedicels. — South Florida. — Leaves 2′ – 3′ long. Drupes 1″ in diameter.

2. ARDISIA, Swartz.

Flowers perfect. Calyx 5-parted. Corolla 5-cleft, convolute in the bud. Stamens 5; the anthers mostly longer than the filaments, opening from the apex downward. Ovary 1-celled, many-ovuled. Style slender: stigma acute. Drupe globular, 1-seeded. — Leaves coriaceous. Flowers in terminal racemes or panicles.

1. **A. Pickeringia,** Torr. & Gray. Smooth; leaves oblong-obovate, obtuse, entire, narrowed into a short petiole, pale beneath; panicles terminal, short; corolla dotted with minute black globules. — South Florida. July. — Leaves 2′ long. Drupe 1½″ in diameter, shorter than the pedicel.

ORDER 85. PLANTAGINACEÆ. (PLANTAIN FAMILY.)

Chiefly stemless herbs, with radical mostly ribbed leaves, and small whitish spiked or capitate flowers, borne on a naked scape. — Calyx of 4 imbricated sepals, with scarious margins. Corolla salver-shaped, 4-parted, withering. Stamens 2 – 4, included or exserted, inserted on the tube of the corolla, and alternate with its lobes: anthers 2-celled, deciduous. Style slender. Ovary free, 2 – 4-celled. Capsule 2-celled, few – many-seeded, opening transversely. Seeds attached to the deciduous partition. Embryo straight in fleshy albumen.

1. PLANTAGO, L. PLANTAIN.

Characters same as the order.

* *Flower perfect.*

1. **P. major,** L. Leaves ovate or oval, smooth or pubescent, 5 – 7-ribbed, mostly toothed, narrowed into a broad concave petiole; scape pubescent; spike long-cylindrical, densely many-flowered; bracts ovate; capsule many-seeded. — Low ground around dwellings. Introduced. May – Aug. — Scape 6′ – 12′ high. Leaves 4′ – 6′ long.

2. **P. cordata,** Lam. Smooth; leaves broadly ovate or cordate, toothed, 7 – 9-ribbed, on long flat petioles; spike long-cylindrical, rather loosely flowered; bracts roundish; capsule 2 – 4-seeded. — Low ground, in the upper districts of Georgia, Tennessee, and northward. April – June. ♃ — Scape 1° high. Leaves 3′ – 8′ long.

3. **P. Rugelii,** Decaisne. Leaves smooth or pubescent, oblong, entire or obscurely denticulate, 3 – 5-ribbed; spike cylindrical, rather loosely flowered; bracts acute, shorter than the smooth calyx; capsule conical, 4-seeded. — Hills near Decatur, Alabama. *Rugel.* — Plant small. Scape slender.

4. **P. lanceolata,** L. Smooth or pubescent; leaves lanceolate, acute, denticulate, 3 – 5-ribbed, long-petioled; spikes dense, ovate or oblong; capsule 2-seeded. — Pastures and waste ground. Introduced. — Scapes 1° – 2° high. Spikes 1′ – 2′ long.

5. **P. sparsiflora,** Michx. Leaves smooth, lanceolate, toothed or entire, narrowed into a long petiole; scape much longer than the leaves, pubescent below; spike long, loosely flowered; bracts ovate; calyx-lobes obtuse; capsule 2-seeded. (P. interrupta, *Lam.*) — Moist pine barrens, Georgia and South Carolina. June - Sept. — Spikes 6′ – 9′ long.

* * *Flowers diœcious: annuals.*

6. **P. Virginica,** L. Pubescent; leaves lanceolate or oblong, toothed or entire, 3 – 5-ribbed, on rather short petioles; spike cylindrical, densely-flowered; stamens 4; capsule 2 – 4 seeded. (P. purpurascens, *Nutt.*) — Low sandy soil, very common. April – June. — Scapes 1′ (and then 2 – 4-flowered) – 1° high. Leaves ½′ – 6′ long.

7. **P. heterophylla,** Nutt. Smooth or pubescent; leaves somewhat fleshy, linear, entire, or with scattered spreading teeth; spikes linear, closely flowered; the lower flowers scattered; stamens 2, exserted; capsule many-seeded, twice the length of the calyx. — Waste places and fields, Florida and northward. April and May. — Scape 2′ – 6′ high, commonly longer than the leaves.

P. PUSILLA, Nutt. (which may be found within our limits) differs from No. 7 in having the ovoid 4-seeded capsule scarcely longer than the calyx.

ORDER 86. PLUMBAGINACEÆ. (LEADWORT FAMILY.)

Herbs or shrubs, with scattered or radical and clustered leaves. — Calyx tubular or funnel-shaped, 5-toothed, plaited, persistent. Corolla salver-shaped, 5-lobed or 5-petalous, with the 5 stamens opposite the lobes or petals, and inserted on their claws or on the receptacle. Styles 5, distinct or united. Ovary 1-celled, with the solitary anatropous ovule suspended from the apex of the filiform cord which arises from the base of the cell. Fruit utricular or capsular, variously dehiscent. Embryo straight, in mealy albumen.

1. STATICE, L. MARSH ROSEMARY.

Calyx bracted; the limb scarious, 5-lobed. Petals 5, distinct, or united by their claws. Stamens 5, inserted on the claws of the petals. Styles separate or nearly so: stigmas slender. Utricle variously dehiscent. — Perennial herbs, growing in saline marshes, with fleshy chiefly radical leaves, and scape-like stems.

1. **S. Caroliniana,** Walt. Leaves oblong or obovate, tapering into a long petiole; scape scaly, widely branching; flowers mostly single, in 1-sided

spreading spikes; calyx funnel-shaped, smooth, the lobes of the scarious limb alternating with 5 smaller ones. — Salt marshes, Florida, and northward. Aug. and Sept. — Scape $\frac{1}{2}$° – 2° high. Leaves 3′ – 6′ long. Flowers blue.

2. PLUMBAGO, Tourn. Leadwort.

Calyx tubular, 5-ribbed, 5-toothed. Corolla salver-shaped, 5-lobed. Stamens 5, inserted on the receptacle. Styles united. Stigmas linear. Utricle splitting into valves from the base upward. — Herbs or shrubs, with alternate entire mostly clasping leaves, and blue or white flowers in terminal spikes.

1. **P. scandens,** L. Shrubby; leaves ovate-lanceolate, acute, narrowed into a clasping petiole; calyx glandular-viscid, half as long as the tube of the corolla; lobes of the corolla ovate, white; style smooth. — South Florida. — Leaves 2′ – 3′ long. Spike elongated.

Order 87. PRIMULACEÆ. (Primrose Family.)

Herbs, with simple alternate or opposite leaves, and regular flowers. — Calyx 4 – 5-lobed, persistent. Corolla 4 – 5-lobed. Stamens 4 – 5, opposite the lobes of the corolla, and inserted on its tube. Ovary free, or partly adherent to the calyx, 1-celled, many-ovuled. Placenta central, globose. Style single. Capsule 1-celled, many-seeded, valvate or circumscissile. Seeds anatropous or amphitropous. Embryo straight in fleshy albumen.

Synopsis.

* Ovary free from the calyx.

+ Capsule opening by valves or teeth.

1. HOTTONIA. Corolla salver-shaped. Leaves pectinately dissected.
2. LYSIMACHIA. Corolla wheel-shaped. Stems leafy. Leaves opposite, entire.
3. DODECATHEON. Corolla wheel-shaped. Stemless. Leaves radical.

+ + Capsule opening transversely.

4. ANAGALLIS. Parts of the flower 5. Leaves opposite. Stamens bearded.
5. CENTUNCULUS. Parts of the flower 4. Leaves alternate. Stamens beardless.

* * Ovary partly adherent to the calyx.

6. SAMOLUS. Stamens 5, with sterile filaments interposed. Capsule valvate.

1. HOTTONIA, L.

Calyx 5-parted. Corolla salver-shaped, 5-lobed. Stamens 5. Style slender. Capsule globose, at length splitting into 5 valves, which cohere at the base and apex. Seeds fixed by the base, anatropous. — Aquatic perennial herbs, with pectinately dissected leaves. Flowering stems mostly clustered, nearly leafless, inflated, bearing at the joints whorls of small white flowers.

1. **H. inflata,** Ell. Flowering stems 3 – several in a terminal cluster, much inflated; upper stem-leaves crowded, with filiform divisions; bracts entire. — Ponds and ditches in the upper districts, Mississippi, and northward. June.

2. LYSIMACHIA, L. Loosestrife.

Calyx 5-parted. Corolla wheel-shaped, 5-lobed. Stamens 5; the filaments often monadelphous at the base, and commonly with the rudiment of a sterile one interposed. Style slender. Capsule globose, 5 – 10-valved, few – many-seeded. Seeds amphitropous. — Perennial herbs, with entire opposite or whorled leaves, and axillary or racemose yellow flowers.

* *Flowers in terminal racemes or panicles.*

1. **L. stricta,** Ait. Stem smooth, erect, branching; leaves very numerous, opposite, dotted, lanceolate, acute at each end; racemes long, leafy at the base; pedicels slender; lobes of the corolla lanceolate-oblong, obtuse, entire, marked with dark lines; filaments monadelphous, unequal; sterile ones none; capsule 5-valved, 3 – 5-seeded.—Var. ANGUSTIFOLIA. Leaves linear-lanceolate, obtuse; lobes of the corolla lanceolate, acute. (L. angustifolia, *Michx.* L. Loomisii, *Torr.*, corolla-lobes broader.) — Low ground in the middle and upper districts. July. — Stem 1° – 2° high. Leaves 2′ long. Flowers small.

2. **L. Fraseri,** Duby. Stem glandular-pubescent at the summit, erect; leaves opposite, ovate or cordate-ovate, acuminate, narrowed into a short petiole; flowers in a leafless panicle; calyx bell-shaped, the lobes fringed on the margins; lobes of the corolla ovate-lanceolate, obtuse, entire; filaments monadelphous, unequal; sterile ones none. — South Carolina. *Fraser.* (*)

3. **L. Herbemonti,** Ell. Stem erect, smooth, simple; leaves (and flowers) four in a whorl, ovate-lanceolate, sessile, dotted; flowers racemose, or short pedicels, the upper ones scattered; lobes of the corolla oblong-lanceolate, dotted; filaments monadelphous at the base. (L. asperulæfolia, *Poir* ?) — Near Columbia, South Carolina, *Elliott.* North Carolina, *Curtis, Croom.* — Stem 2° high. Leaves faintly 3 – 5-nerved.

* * *Flowers axillary.*

4. **L. quadrifolia,** L. Stem pubescent, simple; leaves 4 – 5 in a whorl, ovate-lanceolate, acute, dotted, sessile; peduncles filiform; lobes of the corolla ovate-oblong, dotted, filaments monadelphous. — Shady woods in the upper districts, and northward. July. — Stem 2° high.

5. **L. ciliata,** L. Stem mostly branching, smooth; leaves opposite, lanceolate-ovate, acute, cordate or rounded at the base, on ciliate petioles; corolla longer than the calyx, with broadly ovate or roundish denticulate lobes; peduncles opposite. — Varies (L. hybrida, *Michx.*) with the leaves lanceolate or ovate-lanceolate, narrowed into a short petiole; the uppermost, like the peduncles, often whorled; or (L. heterophylla, *Michx.*) with the lowest leaves obovate, the others long, lanceolate; or (L. angustifolia, *Lam.*) with linear nearly sessile leaves, and a more slender stem, and smaller flowers. — Woods and thickets, chiefly in the upper districts, Mississippi, and northward. July and Aug. — Stem 1° – 2° high. Leaves 2′ – 4′ long.

6. **L. radicans,** Hook. Smooth throughout; stem long, prostrate; the slender branches often rooting at the apex; leaves opposite, ovate-lanceolate, acute, on long and slender petioles; peduncles longer than the leaves; corolla

as long as the calyx. — Swamps and marshy banks of streams, in the upper districts. July. — Stem 2° – 3° long. Flowers smaller than in any form of the preceding.

7. **L. longifolia,** Pursh. Smooth; stem erect, mostly simple, 4-angled; leaves linear, obtuse, sessile, with the margins revolute, the lowest ones spatulate; corolla large, with roundish abruptly acute lobes. — Wet banks, South Carolina, and northward. July to Sept. — Stem 1° – 3° high. Leaves 2′ – 4′ long, rather rigid. Corolla 8″ – 9″ in diameter.

3. DODECATHEON, L. American Cowslip.

Calyx 5-cleft, the lobes reflexed. Corolla-tube very short, the 5-parted limb reflexed. Stamens 5, the filaments monadelphous at the base: anthers long and linear, erect. Capsule oblong-ovate, 5-valved at the apex, many-seeded. — Stemless herbs. Leaves radical, clustered, spatulate or oblong. Flowers umbellate, terminating the naked scape, white or purple.

1. **D. Meadia,** L. Smooth; leaves entire or obscurely crenate; umbel bracted, many-flowered; flowers showy, nodding. — Woods, North Carolina and Tennessee. May and June. ♃ — Scape 1° high. Leaves 4′ – 6′ long.

4. ANAGALLIS, L. Pimpernel.

Calyx 5-parted. Corolla wheel-shaped, 5-parted, longer than the calyx. Stamens five: filaments bearded. Capsule globose, opening transversely, many-seeded. — Low herbs, with opposite or whorled leaves, and axillary peduncled flowers.

1. **A. arvensis,** L. Stem branching, spreading, 4-angled; leaves ovate, sessile; peduncles longer than the leaves, nodding in fruit; flowers red. — Fields and pastures. Introduced. July. ① — Stem 6′ long.

5. CENTUNCULUS, L.

Calyx 4-parted. Corolla bell-shaped, 4-cleft, shorter than the calyx. Stamens 4, beardless. Capsule globose, many-seeded, opening transversely. — Small annuals, with alternate leaves, and minute nearly sessile axillary white flowers.

1. **C. minimus,** L. Stem 3-angled, ascending, mostly branched; leaves obovate, acute; flowers often clustered. (C. lanceolatus, *Michx.*) — Low ground near the coast, Florida to North Carolina, and westward. March and April. — Stem 1′ – 6′ long.

6. SAMOLUS, L.

Calyx 5-cleft; the tube adherent to the base of the ovary. Corolla salver-shaped, 5-parted, commonly with slender filaments interposed. Stamens 5, included. Capsule 5-valved at the apex, many-seeded. — Smooth and somewhat fleshy marsh herbs, with alternate entire leaves, and small white flowers in terminal racemes.

1. **S. floribundus,** Kunth. Stem at length much branched; leaves obovate, the lowest tufted, spreading, the others scattered; racemes many-flowered; pedicels long, filiform, minutely bracted in the middle; capsule globose, longer than the calyx; flowers minute. — Brackish marshes, Florida to Mississippi, and northward. May – July. ② — Plant 6′ – 12′ high, pale green.

2. **S. ebracteatus,** Kunth. Stem simple or sparingly branched, naked above; leaves spatulate-obovate; racemes few-flowered; pedicels bractless; capsule shorter than the calyx; flowers conspicuous. — Saline marshes, Florida, and westward. May and June. — Stem 1° – 2° high.

ORDER 88. LENTIBULACEÆ. (BLADDERWORT FAMILY.)

Aquatic or marsh herbs, with entire or dissected leaves, and irregular flowers. — Calyx 2-lipped. Corolla 2-lipped, personate, spurred at the base. Stamens 2, short, included: anthers 1-celled. Ovary free, ovoid, 1-celled. Ovules numerous, anatropous, inserted on the free central globose placenta. Style short: stigma 2-lipped, the lower lip larger and covering the anthers. Capsule globose, many-seeded, opening irregularly. Embryo straight and thick. Albumen none.

1. UTRICULARIA, L. BLADDERWORT.

Lips of the calyx entire. Throat of the corolla nearly closed by the projecting palate; the lips entire or slightly lobed, the lower one with an appressed or depending spur at the base. — Herbs, floating in still water by means of small air-bladders attached to the finely dissected leaves (or roots), or rooting in damp earth, with entire leaves, and few or no air-bladders. Scapes or peduncles 1 – many-flowered.

* *Stem floating: upper leaves whorled, on inflated petioles; the others scattered and finely dissected: flowers yellow.*

1. **U. inflata,** Walt. Scape 5 – 10-flowered; corolla large (¾′ wide); the lower lip 3-lobed, twice as long as the appressed conical notched spur, the upper concave, nearly entire; fruit nodding. — Var. MINOR. Every way smaller; scape 2-flowered. — Ponds and ditches, Florida to North Carolina, and westward. April and May. — Stem 2° long. Scape 6′ – 12′ high.

* * *Stem floating: leaves all scattered and finely dissected: flowers yellow.*

2. **U. vulgaris,** L. Leaves decompound; scape scaly, 5 – 12-flowered; throat of the corolla closed by the prominent palate; the lobes nearly entire, with reflexed margins, longer than the conical obtuse somewhat spreading spur; fruit nodding. — Ponds and still water, Mississippi to North Carolina, and northward. May – July. — Stem 2° – 3° long. Scapes 6′ – 12′ high. Corolla ½′ wide.

3. **U. striata,** Leconte. Leaves decompound; scape slender, sparingly bracted, 5 – 6-flowered; lips of the long-pedicelled corolla nearly equal, 3-lobed;

the upper one concave, striate in the middle, the lower with reflexed margins, as long as the linear nearly appressed notched spur; palate dotted with brown; fruit erect. (U. fibrosa, *Ell.*) — Still water, Florida, and northward. Sept. — Scapes 10′ high. Corolla ½′ wide.

4. **U. fibrosa,** Walt. Small; leaves short, sparingly divided, root-like; scape 1 – 3- (mostly 2-) flowered, almost bractless; lips of the small (4″ – 5″) corolla equal, roundish; the upper one slightly 3-lobed; the lower entire, rather shorter than the subulate appressed spur; palate globose, 2-lobed; fruit erect, on stout pedicels. (U. longirostris, *Leconte.* U. biflora, *Lam.*?) — Ponds, Florida to South Carolina. May and June. — Stem 4′ – 6′ long, with clustered branches. Scape 2′ – 4′ high.

5. **U. gibba,** L. Stem short, with clustered branches; leaves sparingly divided; scape 1 – 2-flowered; lips of the corolla nearly equal, longer than the gibbous obtuse appressed spur; fruit erect. (U. fornicata, *Leconte.*) — Shallow ponds, South Carolina, *Elliott,* and northward. June. — Stem 2′ – 3′ long. Scape 1′ – 3′ high.

* * * *Stem floating: leaves whorled, finely dissected: flowers purple.*

6. **U. purpurea,** Walt. Stem long, filiform; scape mostly 1-flowered; upper lip of the corolla truncated; the lower 3-lobed, with the lateral lobes sac-like, longer than the subulate spur. — Shallow ponds, Florida to Mississippi, and northward. June. — Stem 1° – 2° long. Scape 2′ – 3′ high. Corolla 4″ wide.

* * * * *Stemless: scape rooting, scaly: leaves linear and entire, or none: air-bladders few or none: flowers yellow.*

7. **U. cornuta,** Michx. Scape 2 – 4-flowered; pedicels short, as long as the calyx; lips of the large (¾′ wide) corolla obovate, unequal; the lower one larger, abruptly pointed, entire, as long as the horn-shaped acute depending spur, the margins strongly reflexed. (U. personata, *Leconte,* the more numerous (4 – 12) and scattered flowers much smaller.) — Swamps, Florida, and northward. July – Sept. — Scape 1° high.

8. **U. subulata,** L. Scape setaceous, 3 – 9-flowered; pedicels much longer than the calyx; lower lip of the small (3″ – 4″) corolla 3-lobed, longer than the appressed conical green-pointed spur; leaves, when present, linear, fugacious. (U. setacea, *Michx.*) — Wet sandy pine barrens, Florida to North Carolina, and westward. Feb. – May. — Scape 2′ – 8′ high.

9. **U. bipartita,** Ell.? Scape filiform, 1 – 3-flowered; pedicels long and slender; upper lip of the corolla slightly 3-lobed; the lower entire, as long as the conical obtuse spur; lower lip of the calyx sometimes 2-cleft; fruit erect. — Miry margins of ponds near Tallahassee, Florida, to South Carolina. Sept. — Scape 4′ – 6′ high. Corolla 6″ – 8″ wide.

2. PINGUICULA, Tourn. Butterwort.

Upper lip of the calyx 3-lobed, the lower 2-lobed. Corolla somewhat 2-lipped; the upper lip 2-lobed; the lower 3-lobed, spurred at the base;

palate hairy. — Stemless herbs. Leaves all radical, clustered, entire, with the margins commonly involute. Scape naked, commonly viscid.

* *Flowers yellow.*

1. **P. lutea,** Walt. Clammy-pubescent; leaves oblong-obovate; corolla large, with the rounded lobes 2 – 4-cleft; spur subulate. — Open flat pine barrens, common. Feb. – April. — Plant yellowish. Scape 6′ – 12′ high. Corolla 1′ – 1½′ wide, nodding.

* * *Flowers purple, often changing to white.*

2. **P. elatior,** Michx. Leaves clammy-pubescent, spatulate-ovate; scapes villous near the base; lobes of the corolla 2-cleft, rounded; spur obtuse. — Margins of ponds, Florida to North Carolina. March and April. — Scapes 8′ – 12′ high. Corolla 1′ wide.

3. **P. australis,** Nutt. Smoothish; leaves lanceolate or oblong, flat; corolla 5-parted, the wedge-obovate lobes 2-cleft, acutish; spur sac-like, obtuse. — Shallow ponds, West Florida, near the coast. March. — Scapes 1° high. Corolla 1′ wide.

4. **P. pumila,** Michx. Clammy-pubescent; leaves roundish or obovate; lobes of the corolla obcordate; spur somewhat sac-like, obtuse. — Low sandy pine barrens, Georgia, Florida, and westward. March and April. — Scape 2′ – 6′ high. Corolla ½′ – ¾′ wide.

Order 89. BIGNONIACEÆ. (Bignonia Family.)

Herbs, shrubs, or trees, with simple or compound leaves, and regular or somewhat irregular showy flowers. — Calyx 2-lipped, 5-lobed, or truncate and entire. Corolla tubular or bell-shaped, mostly 2-lipped. Fertile stamens 2, or 4 and didynamous, inserted on the corolla: anther-cells diverging. Ovary 2-celled, many-ovuled; the base surrounded with a glandular disk. Style filiform: stigma 2-lipped. Capsule 2-valved, 2- or 4-celled, many-seeded. Embryo flat. Albumen none.

Synopsis.

Suborder I. BIGNONIEÆ. Trees, shrubs, or woody vines. Capsule 2-celled, the valves separating from the partition. Seeds flat, winged. Cotyledons notched at each end. — Leaves opposite.

1. BIGNONIA. Valves of the capsule parallel with the partition. Leaves compound.
2. TECOMA. Valves of the capsule contrary to the partition. Leaves compound.
3. CATALPA. Valves of the capsule contrary to the partition. Leaves simple.

Suborder II. SESAMEÆ. Herbs. Capsule 4-celled. Seeds wingless. Cotyledons thick, entire.

4. MARTYNIA. Capsule woody, beaked. Leaves simple, alternate or opposite.

1. BIGNONIA, Tourn. Cross-vine.

Calyx cup-shaped, truncate or slightly 5-toothed. Corolla tubular-bell-shaped, 5-lobed. Fertile stamens 4, didynamous; anthers smooth. Valves of the capsule flattened parallel with the partition, and separating from it at maturity. Seeds flat, winged. — Climbing woody vines. Leaves opposite, compound.

1. **B. capreolata,** L. Leaves evergreen; the short petiole terminated by 2 cordate-oblong entire stalked leaflets, with a branched tendril between; pedicels clustered, axillary, elongated. — Woods, Florida to Mississippi, and northward. April. — Stem climbing high. Leaflets 3′ – 6′ long. Corolla 2′ long, red without, yellow within. Capsule $\frac{1}{2}$° long.

2. TECOMA, Juss. Trumpet-flower.

Calyx bell-shaped, 5-toothed. Corolla funnel-shaped, 5-lobed. Fertile stamens 4, didynamous. Valves of the capsule convex, contrary to the partition. Seeds winged. — Shrubs or woody vines. Leaves opposite, compound, deciduous.

1. **T. radicans,** Juss. — Stem climbing by rootlets; leaves pinnate, more or less pubescent; leaflets 9 – 11, ovate or ovate-lanceolate, acute or acuminate, serrate; racemes terminal, few-flowered. (Bignonia radicans, *L.*) — Woods and margins of fields, Florida to North Carolina, and westward. May and June. — Corolla 2′ – 3′ long, scarlet without, yellow within. Capsule 4′ – 5′ long.

2. **T. stans,** Juss. Stem erect; leaves smooth, pinnate, long-petioled; leaflets 7, lanceolate, acute, finely serrate; racemes many-flowered; calyx tubular; stamens 5, the fifth bearing an abortive anther. — South Florida. March – May. — Stem 3° – 4° high. Corolla $1\frac{1}{2}$′ long, yellow.

3. CATALPA, Scop.

Calyx 2-lipped. Corolla bell-shaped, somewhat 2-lipped, 5-lobed. Fertile stamens 2. Valves of the cylindrical capsule contrary to the partition. Seeds flat, with fimbriate wings. — Small trees. Leaves simple opposite. Flowers in terminal panicles.

1. **C. bignonioides,** Walt. Leaves large, cordate, entire or angularly lobed, acuminate, long-petioled, pubescent; panicle trichotomous, many-flowered; calyx purple; corolla white, variegated with yellow and purple within, the lobes undulate; capsule slender, elongated, pendulous. (C. cordifolia, *Ell.*) — River-banks, Georgia, Florida, and westward. May. — Corolla 1′ long. Capsules 1° long.

4. MARTYNIA, L. Unicorn-Plant.

Calyx 5-cleft, 2 – 3-bracted. Corolla irregular, tubular-bell-shaped, unequally 5-lobed. Fertile stamens 2 or 4. Capsule woody, falsely 4-celled, ending in two long recurved horns, and opening between them. Seeds wingless. — Viscid

branching annuals. Leaves petioled, entire, roundish, the upper ones alternate. Flowers racemed.

1. **M. proboscidea,** Glox. — Stems thick, at length prostrate; leaves round-cordate; corolla ($1\frac{1}{2}'$ long) whitish, spotted with yellow and purple; capsule crested on one side, shorter than the beaks. — Waste places. Introduced. July and Aug.

ORDER 90. OROBANCHACEÆ. (BROOM-RAPE FAMILY.)

Low, leafless, scaly herbs, parasitic on roots, with bilabiate didynamous flowers. — Calyx 4 – 5-toothed or parted. Corolla withering-persistent, tubular, the upper lip 2-cleft or entire, the lower 3-lobed. Stamens inserted on the tube of the corolla: anthers persistent. Ovary free, 1-celled, with 2 – 4 parietal placentæ. Style simple, curved at the apex: stigma thick, 2-lobed. Capsule 2-valved, many-seeded. Seeds very small, anatropous, with the minute embryo at the base of transparent albumen. — Flowers perfect or polygamous, solitary or spiked.

Synopsis.

1. EPIPHEGUS. Flowers polygamous, spiked; the lower ones fertile, the upper sterile. Calyx 2-bracted, 5-toothed. Stem branching.
2. CONOPHOLIS. Flowers perfect, spiked. Calyx 2-bracted, cleft on the lower side. Stem simple, thick and fleshy.
3. APHYLLON. Flowers solitary, perfect. Calyx bractless, 5-cleft. Corolla nearly equally 5-lobed.

1. EPIPHEGUS, Nutt. BEECH-DROPS.

Flowers polygamous; the upper ones slender and sterile, the lower abbreviated and fertile. Calyx 5-toothed. Capsule 2-valved at the apex, with 2 placentæ on each valve. — Stem smooth, slender, much branched, purplish. Flowers small, in loose slender spikes. Corolla purplish.

1. **E. Virginiana,** Bart. — Under Beech-trees, in deep shades, Florida to Mississippi, and northward. Aug. — Stems $6'$ – $12'$ high. Flowers scattered. Corolla of the sterile flowers $4''$ – $6''$ long, 4-toothed, curved.

2. CONOPHOLIS, Wallr. SQUAW-ROOT.

Flowers perfect, densely spiked. Calyx 2-bracted, tubular, 4-toothed, cleft on the lower side. Upper lip of the corolla arching, notched; the lower short, 3-toothed. Stamens exserted. Capsule 2-valved, with 2 placentæ on each valve. — A thick and fleshy whitish simple herb, covered with imbricated scales. Flowers yellowish, spreading.

1. **C. Americana,** Wallr. (Orobanche, *L.*) — Shady woods, Florida to Mississippi, and northward. April. — Stems clustered from matted roots, $4'$ – $6'$ high, $\frac{1}{2}'$ thick.

3. APHYLLON, Mitchell.

Flowers solitary, perfect. Calyx 5-cleft, bractless. Corolla tubular, curved, nearly equally 5-lobed. Stamens included. Capsule 2-valved, with 4 equidistant placentæ.—Stemless or nearly so. Flowers purplish, on a long scape or peduncle.

1. **A. uniflorum,** Torr. & Gray. — Stem very short and scaly; peduncles 1 – several, 3′ – 5′ high, pubescent; calyx-lobes lanceolate-subulate. (Orobanche uniflora, *L.*) — Woods, Florida, and northward.

ORDER 91. SCROPHULARIACEÆ. (FIGWORT FAMILY.)

Chiefly herbs. Leaves commonly opposite, without stipules. Calyx 4 – 5-cleft or parted. Corolla 4 – 5-lobed, regular, or bilabiate; the lobes imbricated in the bud. Fertile stamens 4 (sometimes 2, rarely 5), mostly didynamous, inserted on the tube of the corolla: anther-cells often separate, opening lengthwise. Ovary free, 2-celled, many-ovuled. Placentæ central. Style simple or 2-cleft. Capsule 2-celled, many- (rarely 1–few-) seeded. Seeds anatropous. Embryo small, in copious albumen.

Synopsis.

§ 1. Upper lip of the corolla exterior in the bud (except Mimulus). Capsule commonly septicidally dehiscent.

* Stamens 5, all perfect. Corolla regular.

1. VERBASCUM. Corolla wheel-shaped. Filaments, or a part of them, bearded. Leaves alternate.

* * Fertile stamens 4; the fifth sterile or rudimentary. Flowers cymose. Leaves opposite.

2. SCROPHULARIA. Fifth stamen scale-like. Corolla globose or oblong; four of the lobes short and erect.
3. CHELONE. Fifth stamen shorter than the others. Corolla tubular, inflated, contracted at the throat. Seeds winged.
4. PENTSTEMON. Fifth stamen as long as the others. Corolla dilated upward. Seeds wingless.

* * * Fertile stamens 4: sterile ones none. Flowers axillary or racemed.

5. LINARIA. Corolla spurred at the base. Capsule toothed at the apex.
6. MIMULUS. Calyx tubular, 5-angled, 5-toothed. Corolla large.
7. HERPESTIS. Calyx 5-parted; the three outer lobes much larger. Corolla short.

* * * * Fertile stamens 2: sterile ones 2 or none.

8. GRATIOLA. Calyx 5-parted. Sterile filaments entire, included. Capsule ovate or globose.
9. ILYSANTHES. Calyx 5-parted. Sterile filaments 2-cleft, exserted. Capsule oblong.
10. MICRANTHEMUM. Calyx 4-parted. A scale-like appendage below the filaments.

§ 2. Upper lip of the corolla interior in the bud. Capsule commonly loculicidally dehiscent.

* Corolla regular or slightly 2-lipped; the lobes nearly equal.

+ Stamens 2, distant. Capsule mostly obcordate.

11. AMPHIANTHUS. Style 2-cleft. Flowers solitary, terminating the central scape and in the axils of the tufted radical leaves.
12. VERONICA. Style simple. Flowers in leafy racemes or spikes.

+ + Stamens 4 - 5, equal. Peduncles axillary, 2 or more together.

13. CAPRARIA. Corolla bell-shaped, 5-cleft. Capsule loculicidal. Leaves alternate.
14. SCOPARIA. Corolla wheel-shaped, 4-cleft. Capsule septicidal. Leaves opposite or whorled.

+– +– +– Stamens 4. Flowers racemed or spiked.

++ Anthers 1-celled.

15. BUCHNERA. Corolla salver-shaped. Stamens didynamous. Flowers spiked.

++ ++ Anthers 2-celled. Stamens equal.

16. SEYMERIA. Corolla bell-shaped, yellow. Stamens included.

17. MACRANTHERA. Corolla tubular, orange. Stamens long-exserted.

++ ++ ++ Anthers 2-celled. Stamens didynamous.

18. OTOPHYLLA. Anthers unequal. Corolla bell-shaped. Upper leaves 2-eared at the base.

19. DASYSTOMA. Anthers equal, awned at the base. Corolla funnel-shaped, yellow. Leaves mostly pinnatifid.

20. GERARDIA. Anthers equal, pointed at the base. Corolla bell-shaped, purple. Leaves narrow, entire.

* * Corolla tubular, 2-lipped; the upper lip arching and enclosing the 4 didynamous stamens.

+– Anther-cells unequal.

21. CASTILLEIA. Anther-cells separate. Leaves alternate, the floral ones colored.

+– +– Anther-cells equal.

22. SCHWALBEA. Calyx 10–12-ribbed, the upper teeth smaller. Capsule oblong, many-seeded. Leaves entire, alternate.

23. PEDICULARIS. Capsule sword-shaped, few-seeded. Leaves pinnatifid.

24. MELAMPYRUM. Calyx 4-cleft. Capsule flat, 1–4-seeded. Upper leaves bristly-toothed at the base.

1. VERBASCUM, L. Mullein.

Calyx 5-parted. Corolla rotate, 5-lobed; the lobes nearly equal, roundish. Stamens 5, declined, all, or a part of them, bearded. Stigma simple. Capsule globose, many-seeded. — Tall biennial herbs. Leaves alternate. Flowers in racemes.

1. **V. Thapsus,** L. Woolly throughout; stem stout, simple; leaves slightly crenate, rugose; the lowest large, oblong, petioled, the others broadly decurrent on the stem; raceme spike-like, dense, cylindrical; flowers yellow. — Old fields and waste ground. Introduced. — Stem 2°–5° high. Lowest leaves 1° long. Raceme rigid, 1°–2° long.

2. **V. Blattaria,** L. Stem smooth below, pubescent above, sparingly branched or simple; leaves smooth, oblong, acute, serrate or pinnately lobed; the lowest petioled; the upper clasping; racemes elongated, glandular, the flowers scattered; corolla bright or pale yellow; filaments all bearded with purple hairs. — Waste ground, chiefly in the upper districts. Introduced. — Stem 2°–3° high.

3. **V. Lychnitis,** L. Plant mealy-white; stem branching and angled above; leaves ovate, acute, sessile; the lowest narrowed into a petiole, greenish above; flowers in a pyramidal panicle, yellow; filaments bearded with white hairs. — In Carolina, *Muhlenberg*. Introduced.

2. SCROPHULARIA, L. Figwort.

Calyx 5-parted. Corolla globose or oblong, 5-cleft; the 4 upper lobes erect, with the two uppermost longer; the lowest spreading. Stamens 4, declined; the fifth sterile and scale-like, placed near the orifice of the tube of the corolla:

anther-cells transverse and confluent into one. Capsule many-seeded. — Tall herbs, with opposite leaves, and greenish-purple flowers in loose cymes, forming a narrow panicle.

1. **S. nodosa,** L. Smooth; stem 4-sided; branches elongated, spreading; leaves ovate or oblong, or the uppermost lanceolate, acute, serrate, rounded or cordate at the base; flowers small. (S. Marilandica, *L.*) — Shady banks and thickets, Florida to Mississippi, and northward. Sept. — Stem 2° – 5° high.

3. CHELONE, Tourn. Snake-head.

Calyx 5-parted or 5-sepalous, bracted. Corolla inflated-tubular, contracted at the throat, bilabiate; the upper lip concave, emarginate; the lower obtusely 3-lobed, woolly in the throat. Stamens 4, with the filaments and cordate anthers woolly, and a fifth sterile one shorter than the others. Seeds imbricated, broadly winged. — Smooth perennial herbs, with opposite serrate leaves, and large white or purple flowers in short dense bracted spikes.

1. **C. glabra,** L. Stem simple or branched, 4-sided; leaves lanceolate or oblong, acute or acuminate, on very short petioles; spike terminal, imbricated, nearly sessile, simple or branched; bracts and sepals ovate; corolla white or rose-color. (C. obliqua, *L.*) — Wet banks of streams, Florida and northward, rare in the lower districts. Sept. — Stem 2° high. Leaves 2′ – 4′ long, sometimes pubescent beneath. Corolla 1′ – 1½′ long, concave beneath.

2. **C. Lyoni,** Pursh. Stem simple or branched; leaves ovate or ovate-oblong, rounded or cordate at the base, acuminate, serrate, conspicuously petioled, mostly pubescent on the veins beneath; spike sessile, simple or branched; bracts and calyx-lobes ovate, ciliate; flowers purple. (C. latifolia, *Muhl.*, leaves acute at the base.) — Mountains of North Carolina. Sept. — Stem 2° – 3° high. Leaves 4′ – 6′ long, thinner, and the flowers smaller than in the preceding.

4. PENTSTEMON, L'Her.

Calyx 5-parted. Corolla inflated-tubular, or somewhat bell-shaped, open at the throat, bilabiate; the upper lip rounded, concave, emarginate or 2-lobed; the lower 3-lobed. Stamens 4, declined at the base, and a fifth sterile one as long as the others, and commonly bearded above. Capsule 2-valved, many-seeded. Seeds wingless. — Erect perennial herbs, with opposite leaves, and white or purple flowers in axillary and terminal cymes, forming a close or open narrow terminal panicle.

* *Leaves pinnately divided.*

1. **P. dissectus,** Ell. Smooth or minutely pubescent; divisions of the leaves linear, obtuse, entire or sparingly lobed; cymes few-flowered, long-peduncled; corolla somewhat bell-shaped, with rounded and nearly equal lobes; anther-cells smooth, spreading; sterile stamen bearded at the apex. — Dry soil in the middle districts of Georgia. — Stem 2° high, slender. Calyx-lobes small, acute. Corolla 9″ – 10″ long, purple.

* * *Leaves undivided.*

2. **P. pubescens,** Solander. Pubescent or smooth; leaves lanceolate, acute, serrate or entire, sessile or clasping; the lowest ovate or oblong, tapering into a slender petiole; cymes spreading, few-flowered; tube of the corolla gradually dilated above the middle; the lower lip longer than the upper; sterile stamen bearded down one side; anthers smooth. (P. lævigatus, *Soland.*, a smooth form.) — Dry open woods and fence-rows, Florida to North Carolina, and westward. June and July. — Stem 2° high. Lowest leaves 3′ – 5′ long. Corolla 1′ long, pale purple.

3. **P. Digitalis,** Nutt. Smooth or nearly so; stem-leaves ovate-lanceolate, serrate or entire, clasping; the lowest oblong, narrowed into a petiole; cymes few-flowered, spreading, forming a narrow panicle; tube of the corolla abruptly dilated near the base; the lips nearly equal; sterile stamen bearded down one side. — Dry soil, Georgia, Florida, and westward. July. — Stem 2° high. Corolla 9″ – 12″ long, white or pale purple.

Var. **multiflorus,** Benth. Larger (3° – 4° high); leaves thicker; cymes many-flowered, forming a large spreading panicle; corolla smaller. — Pine barrens, Florida.

5. LINARIA, Juss. Toad-Flax.

Calyx deeply 5-parted. Corolla personate, spurred at the base; the upper lip emarginate or 2-lobed; the lower 3-lobed; the throat commonly closed by the prominent palate. Stamens 4, didynamous. Capsule globose or ovoid, opening at the apex, with few or several tooth-like valves, many-seeded. — Herbs, with alternate or (on the radical branches) opposite or whorled leaves, and axillary or racemose flowers.

* *Stems with prostrate branches at the base, which bear broader opposite or whorled leaves.*

1. **L. Canadensis,** Spreng. Smooth; stem erect, slender, mostly simple; leaves linear, flat, scattered; those on the radical branches oblong; racemes straight; pedicels erect, as long as the calyx; lobes of the small (3″ – 4″) blue and white corolla rounded; spur filiform, curved, as long as the pedicels. (Antirrhinum Canadense, *L.*) — Cultivated ground, common. April and May. ② — Stem 1° – 2° high.

2. **L. Floridana,** n. sp. Stem smooth, ascending, paniculately much branched; leaves scattered, fleshy, terete, linear or club-shaped; those on the radical branches obovate; racemes elongated, flexuous, glandular-hairy; pedicels spreading, 3 – 4 times as long as the calyx; lobes of the small (2″) blue corolla truncate or emarginate; spur very short. — Drifting sands near the coast, West Florida. April and May. ② — Stem 3′ – 12′ high.

* * *Prostrate branches none.*

3. **L. vulgaris,** Miller. Smooth; stem erect, simple or branched; leaves alternate, linear or linear-lanceolate, crowded; raceme dense; flowers large (1′ long), yellow; spur subulate; seeds flattened, margined. — Waste places, North Carolina, and northward. Naturalized. Aug. ♃ — Stem 1° – 3° high.

4. **L. Elatine,** Miller. Hairy; stem prostrate, slender, branching; leaves small, ovate and hastate; the lowest sometimes opposite and toothed; pedicels axillary, filiform, commonly longer than the leaves; flowers small, yellow and purplish; calyx-lobes lanceolate, acute. — Waste places, North Carolina. Naturalized. ⓘ — Stem 4′ – 12′ long.

6. MIMULUS, L. Monkey-flower.

Calyx tubular, 5-angled, sharply 5-toothed. Corolla bilabiate; the upper lip 2-lobed, erect or reflexed; the lower 3-lobed, spreading. Stamens 4, didynamous: anther-cells somewhat confluent. Stigma ovate, 2-lipped. Capsule loculicidally 2-valved, many-seeded. — Erect smooth perennial herbs, with opposite leaves, and axillary purple flowers.

1. **M. ringens,** L. Stem compressed, 4-angled, the angles wingless; leaves oblong or lanceolate, denticulate, cordate and clasping at the base; peduncles longer than the flowers. — Swamps in the upper districts. Aug. — Stem 1° – 2° high. Leaves thin, 2′ – 4′ long. Corolla showy, the palate greenish and pubescent.

2. **M. alatus,** Ait. Stem square, with winged angles; leaves oblong-ovate, acuminate, serrate, tapering at the base into a petiole; peduncles shorter than the flowers. — Swamps, Florida, and northward. July and Aug. — Stem 2° high. Leaves 2′ – 5′ long. Calyx-teeth small.

7. HERPESTIS, Gærtn.

Calyx 5-parted; the 3 outer lobes, especially the upper one, broader. Corolla bell-shaped, 5-lobed or bilabiate, with the upper lip 2-lobed or emarginate, the lower 3-lobed. Stamens 4, didynamous: anther-cells contiguous or divaricate. Style dilated and flattened at the apex. Capsule 2-valved, many-seeded. — Low herbs, with opposite leaves. Flowers opposite, axillary, or in leafy terminal racemes.

* *Stems 4-angled: leaves serrate: peduncles 2-bracted at the base: exterior calyx-lobes oblong: corolla white.*

1. **H. nigrescens,** Benth. Smooth; stem erect, simple or branched; leaves oblong or oblong-obovate, rather obtuse, serrate above the middle; lower peduncles as long as the leaves, the upper much longer; tube of the corolla striped with blue; the upper lip rounded. (Gratiola acuminata, *Walt.*) — Low ground, Florida to North Carolina, and westward. Aug. and Sept. — Stem 1° – 1½° high. Leaves 1′ – 2′ long.

2. **H. peduncularis,** Benth. Smooth; stem decumbent, diffuse, creeping near the base; leaves small, obovate-oblong, entire near the base; peduncles filiform, 3 – 4 times as long as the leaves. — Key West. — Stems 6′ – 12′ long. Leaves 4″ – 6″ long. Flowers smaller than in No. 1.

** * Stems terete, succulent, creeping: leaves ovate or roundish, entire: exterior calyx-lobes cordate or ovate: peduncles 2-bracted at the apex.*

3. **H. Monnieria,** Kunth. Smooth; stems diffuse, creeping; leaves fleshy, wedge-obovate, entire or obscurely crenate; corolla bell-shaped, with the rounded lobes nearly equal; peduncles as long as the flowers; exterior calyx-lobes ovate. (H. cuneifolia, *Pursh.*) — Ditches and muddy banks along the coast, Florida to North Carolina, and westward. June – Sept. ♃ — Stem 1° – 2° long. Leaves 1′ long. Corolla white or pale blue.

4. **H. amplexicaulis,** Pursh. Stem villous, ascending from a creeping base; leaves smoothish, ovate, cordate and clasping, obtuse; peduncles shorter than the flowers; exterior calyx-lobes cordate; base of the ovary surrounded by a 12-toothed disk. (H. rotundifolia, *Ell.*, not of *Pursh.*) — Pine-barren ponds, Florida to North Carolina, and westward. July – Sept. ♃ — Flowering stems 6′ – 8′ high. Leaves ½′ long, crowded. Flowers blue. Plant odorous.

8. GRATIOLA, L. Hedge-Hyssop.

Calyx 5-parted, the lobes nearly equal, narrow. Corolla bilabiate, with the upper lip entire or emarginate, the lower 3-cleft. Fertile stamens 2, included, the anterior ones sterile or wanting. Stigma 2-lipped. Capsule 4-valved, many-seeded. — Low perennial herbs, with opposite leaves, and solitary axillary white or yellow flowers. Calyx mostly 2-bracted.

** Connective of the anthers dilated, the cells transverse: stems tender: flowers peduncled.*

+ Sterile stamens minute or none.

1. **G. Virginiana,** L. Stem branching from the base, glandular-pubescent above; leaves lanceolate, acute, sparingly serrate, sessile, the lower ones narrowed at the base; peduncles slender, the upper ones longer than the leaves; corolla white, with the yellowish tube twice as long as the calyx; capsule ovate, acute. — Muddy banks and ditches, Florida to Mississippi, and northward. April and May. — Stem 6′ – 12′ high. Leaves 1′ long. Corolla 5″ – 6″ long, hairy within.

2. **G. Floridana,** Nutt. Stem simple or branched, smooth; leaves lanceolate or oblong, obtuse, entire or nearly so, narrowed at the base, sessile, the lowest slightly petioled; peduncles filiform, longer than the leaves; lobes of the corolla emarginate, white; the slender yellowish tube three times as long as the calyx. — Muddy banks of the Chipola River, West Florida. April. — Stem 1° high. Leaves 1′ long. Corolla 8″ long. Capsule globose.

3. **G. sphærocarpa,** Ell. Smooth; stem thick, ascending, branching at the base; leaves oblong or lance-oblong, serrate above, narrowed and entire towards the base, sessile, the lowest mostly obovate; peduncles thick, shorter than the leaves, sometimes shorter than the calyx; corolla white, the tube twice as long as the calyx; capsule globose. — Springs and branches, Florida to South Carolina, and westward. March – May. — Stem 4′ – 12′ high. Leaves 1′ long. Corolla ½′ long.

+ + *Sterile stamens manifest.*

4. **G. viscosa,** Schwein. Viscid-pubescent; stem ascending, simple or sparingly branched; leaves ovate-lanceolate, acute, sharply serrate, clasping, 3-nerved; peduncles as long as the leaves; lobes of the corolla white, emarginate, the tube yellowish and bearded within; calyx-lobes lanceolate, much longer than the small globose capsule. — Ditches and muddy places in the upper districts, Mississippi to North Carolina. June – Aug. — Stem 6′ – 12′ high. Leaves ½′ long. Corolla 5″ – 6″ long. Bracts wider than the calyx-lobes.

5. **G. Drummondi,** Benth. Viscid-puberulent; stem decumbent at the base, ascending; leaves lanceolate, acute, sparingly serrate, 3-nerved, clasping; bracts and calyx-lobes subulate, much longer than the capsule. — In Georgia, *Boykin,* and westward.

6. **G. quadridentata,** Michx. Pubescent and somewhat viscid; stem decumbent at the base, ascending, simple or branched; leaves lanceolate, sessile, 4-toothed; peduncles mostly longer than the leaves; corolla yellowish-white; capsule small, globose, much shorter than the linear unequal calyx-lobes; bracts minute. — Margins of pine-barren ponds, Florida to South Carolina, and westward. June – Aug. — Stem 4′ – 6′ high. Leaves ½′ long. Corolla 5″ long.

7. **G. aurea,** Muhl. Smooth; stem decumbent, creeping, the flowering branches ascending, 4-angled; leaves sessile, oblong-lanceolate, slightly serrate; peduncles as long as the leaves, or the upper ones longer; bracts as long as the calyx; corolla bright yellow. — Wet pine barrens in the lower districts of Georgia and South Carolina. April – June. — Stem 1° – 2° long. Leaves ½′ – 1′ long. Corolla 6″ long.

8. **G. officinalis,** L. Smooth; stem erect, 4-angled above; leaves lanceolate, serrulate or entire, slightly clasping; peduncles shorter than the leaves; corolla pale yellow, striped with red, bearded with yellow hairs within; capsule acute, as long as the calyx. — Swamps, in the Southern States, *Leconte.* — Stem 1° – 2° high. Corolla 8″ – 10″ long.

* * *Connective of the anthers not dilated; the cells vertical: stems rigid, hairy: flowers sessile: sterile stamens manifest.*

9. **G. pilosa,** Michx. Hirsute; stem erect, simple or branching at the base; leaves ovate or roundish, sparingly toothed, sessile or slightly clasping; corolla tubular, white, scarcely longer than the calyx. — Low ground, Florida to Mississippi, and northward. June – Aug. — Stem 8′ – 16′ high. Leaves ½′ long. Corolla 4″ long.

10. **G. subulata,** Baldwin. Shrubby, hispid; stem much branched, mostly prostrate; leaves linear, entire, the margins revolute; calyx-lobes subulate, unequal; corolla salver-shaped, somewhat persistent, the upper lip roundish, the lower 3-parted; the slender curved tube three times as long as the calyx, hairy within; lobes of the stigma emarginate; capsule acute. — Low sandy pine barrens, Florida, near the coast. July – Sept. — Stem 3′ – 6′ long. Leaves 3″ – 6″ long. Corolla 6″ long.

9. ILYSANTHES, Raf.

Calyx 5-parted, bractless. Corolla bilabiate; the upper lip short, erect, 2-cleft; the lower larger, spreading, 3-cleft. Fertile stamens 2, included; the two anterior ones sterile, 2-lobed, with one of the lobes tipped with a gland, the other smooth, acute. Capsule ovate or oblong, as long as the calyx. — Smooth annuals, growing in wet or muddy places. Stems 4-angled. Leaves opposite. Peduncles axillary, often reflexed in fruit. Flowers small, purplish.

1. **I. grandiflora,** Benth. Stem creeping, very leafy; leaves roundish, entire, nerveless, partly clasping; peduncles 2 – 3 times as long as the leaves; sterile stamens lobed at the middle. — In Georgia, *Nuttall.* — Leaves 3″ – 4″ long. Corolla larger than in the next.

2. **I. gratioloides,** Benth. Stem erect, at length diffusely branched; leaves lanceolate, oblong, or ovate; the lowest narrowed into a petiole, the upper sessile, acute, obscurely toothed or entire; lower peduncles mostly shorter than the leaves, the upper much longer, spreading; corolla pale blue, twice as long as the calyx; capsule oblong, acute, scarcely longer than the calyx. (Lindernia dilatata and attenuata, *Ell.* Gratiola anagallidea, *Michx.* G. tetragona, *Ell.*?) — Springs and rivulets, common. May – Sept. — Stem 6′ – 12′ long. Leaves ½′ – 1′ long. Corolla 3″ – 4″ long.

3. **I. refracta,** Benth. Stem erect, very slender, forking; radical leaves tufted, oblong, obtuse, entire, narrowed at the base; the others remote, small, lanceolate, sessile; peduncles filiform, many times longer than the leaves, reflexed in fruit; corolla pale blue variegated with purple; capsule oblong-linear, twice as long as the calyx. (Lindernia monticola, *Nutt.*) — Springs and muddy banks of rivulets in the middle and upper districts, Mississippi to North Carolina. July – Sept. — Stem 6′ – 12′ high. Radical leaves 1′ long. Corolla 3″ – 4″ long.

4. **I. saxicola.** Stems clustered, leafy, simple or sparingly branched; leaves oblong, entire, obtuse, sessile; the radical ones densely tufted, narrowed into a petiole; peduncles rather stout, 3 – 4 times as long as the leaves, widely spreading or reflexed in fruit; corolla blue, variegated; capsule ovoid, rather longer than the calyx. (Lindernia saxicola, *M. A. Curtis.*) — On rocks at Tolula Falls, Georgia, and Cherokee, North Carolina, *Curtis.* Aug. ♃ ? — Stems 3′ – 5′ high. Stem-leaves 2″ – 4″ long. Corolla 4″ long.

10. MICRANTHEMUM, Michx.

Calyx 4-parted, or 4-cleft. Corolla somewhat bilabiate; the upper lip shorter, entire; the lower 3-lobed, with the middle lobe longer. Stamens 2, included; the filaments with a gland-like appendage at the base: anther-cells diverging. Style short: stigma capitate. Capsule 2-valved, few-seeded; the delicate partition vanishing at maturity. Seeds oblong, reticulate. — A small smooth perennial herb, with diffuse creeping stems, roundish opposite entire leaves, and minute nearly sessile axillary white flowers.

1. **M. orbiculatum,** Michx. (M. emarginatum, *Ell.* Hemianthus micranthemoides, *Nutt.* Herpestis micrantha, *Ell.?* not of *Pursh.*) — Muddy banks, Florida to North Carolina, and westward. June – Oct. — Stem 6′ – 12′ long. Leaves 3″ – 5″ long, sometimes emarginate. Corolla not longer than the minute (½″) calyx.

11. AMPHIANTHUS, Torr.

Calyx 5-parted. Corolla somewhat funnel-shaped, 4-cleft; the upper and lower lobes rather longer. Stamens 2: anther-cells distinct. Style minutely 2-cleft at the apex, acute. Capsule obcordate, compressed, loculicidal. Seeds oblong, rugulose. — A very small annual, with the linear obtuse leaves clustered at the summit of the short stem, and minute white flowers, some of which are borne on short naked recurved peduncles from the axils of the leaves, and others on a slender (1′ long) terminal 2-bracted scape.

1. **A. pusillus,** Torr. — In shallow excavations of flat rocks, Newton County, Georgia, *Dr. Leavenworth.* March and April.

12. VERONICA, L. Speedwell.

Calyx 4 – 5-parted. Corolla wheel-shaped, or salver-shaped, 4 – 5-lobed. Stamens 2, one each side of the upper lobe of the corolla. Stigma capitate. Capsule compressed and obcordate, or oblong and obtuse, septicidal or loculicidal. Seeds few or many, flattened or concave on the inner face. — Chiefly herbs, with the stem-leaves opposite or whorled, the floral ones alternate. Flowers small, axillary, racemed or spiked, blue or white.

** Leaves whorled: corolla tubular: capsule oblong.*

1. **V. Virginica,** L. Perennial, smooth or pubescent; stem tall, erect; leaves 4 – 7 in a whorl, lanceolate, serrate, short-petioled; flowers very numerous, crowded in axillary (whorled) and terminal spikes; stamens long-exserted; corolla white or purple. (Leptandra, *Nutt.*) — Mountain-meadows, Georgia, and northward. June - August. — Stem 2° – 4° high. Leaves 2′ – 4′ long.

** * Stem-leaves opposite: corolla wheel-shaped: capsule obcordate.*

+ Flowers in dense axillary racemes.

2. **V. officinalis,** L. Perennial, pubescent; stem prostrate, rooting at the base; leaves obovate-elliptical, or wedge-oblong, obtuse, serrate, short-petioled; racemes alternate, many-flowered; corolla blue. — Mountains of North Carolina, and northward. July. — Stem 6′ – 12′ long. Racemes 2′ – 4′ long.

+ + Flowers scattered, in leafy terminal racemes.

3. **V. serpyllifolia,** L. Perennial, smoothish; stem ascending, diffusely branched; leaves oval or roundish, crenate, short-petioled, the floral ones lanceolate and entire; pedicels as long as the calyx; corolla blue. — Low pastures in the upper districts. May – Sept. — Stem 4′ – 6′ long. Leaves 4″ – 6″ long.

4. **V. peregrina,** L. Annual, smooth; stem erect, simple or branched; leaves sessile, oblong, toothed; the lowest narrowed into a petiole; the floral

ones entire; peduncles shorter than the calyx; corolla white, minute. — Cultivated ground, very common. April – June. — Stem 2′ – 12′ high. Leaves ½′ – 1′ long.

5. **V. arvensis,** L. Annual, hairy; stems ascending, branched at the base; leaves ovate, obtuse, crenate, petioled; the floral ones lanceolate, entire, sessile; flowers nearly sessile; corolla pale blue. — Cultivated ground. Introduced. May and June. — Stems 6′ – 12′ high. Leaves 4″ – 6″ long.

6. **V. agrestis,** L. Annual, pubescent; stems prostrate, diffusely branched; leaves all petioled, ovate, coarsely serrate; peduncles much longer than the calyx, recurved in fruit; corolla blue, striate. — Cultivated ground. Introduced. Feb. – May. — Stem 6′ – 12′ long. Leaves 6″ – 9″ long. Fruiting calyx much enlarged.

13. CAPRARIA, L.

Calyx 5-parted, equal. Corolla bell-shaped, equally 5-lobed, smooth within. Stamens 4 – 5: anthers sagittate. Style slender: stigma thick, ovate, at length 2-lobed. Capsule coriaceous, ovate, septicidally 2-valved, the valves 2-cleft at the apex. Seeds numerous, reticulate. — Perennial herbs, or shrubby plants. Leaves alternate, serrate. Peduncles axillary, single or by pairs, mostly 1-flowered.

1. **C. biflora,** L. Shrubby, smooth or pubescent; stem erect, branching; leaves lanceolate or oblong, sharply serrate, narrowed and entire below the middle; peduncles filiform, mostly by pairs, shorter than the leaves; calyx-lobes linear; corolla deeply 5-cleft; stamens 5, included. — South Florida. Nov. — Stem 2° – 3° high. Leaves 1′ – 1½′ long. Flowers white?

14. SCOPARIA, L.

Calyx 4 – 5-parted. Corolla wheel-form, 4-cleft, hairy in the throat. Stamens 4. Style club-shaped at the apex. Capsule septicidally 2-valved, the valves membranaceous, entire. Seeds numerous, reticulate. — Herbaceous or shrubby plants, with opposite or whorled leaves. Peduncles axillary, commonly by pairs, 1-flowered.

1. **S. dulcis,** L. Annual, smooth; leaves ovate or oblong, toothed, mostly three in a whorl, much longer than the peduncles; calyx-lobes oblong; flowers small, white. — South Florida. — Stem 1° – 3° high. Leaves ½′ – 1½′ long.

15. BUCHNERA, L.

Calyx tubular, 5-toothed. Corolla salver-shaped, 5-lobed, the lobes wedge-obovate. Stamens 4, didynamous, included: anthers 1-celled. Style simple, club-shaped at the apex. Capsule coriaceous, straight, loculicidally 2-valved, the valves entire. Seeds numerous, reticulate. — Rough herbs, turning black in withering. Leaves opposite, toothed or entire; the uppermost small, and passing into the bracts of the many-flowered spike. Flowers blue.

1. **B. elongata,** Swartz. Rough with short rigid hairs; stem mostly simple; leaves entire or slightly toothed, 1-nerved, or obscurely 3-nerved; the lowest obovate or obovate-oblong, obtuse, the lower stem-leaves narrowly lanceolate; the uppermost distant, acute; spikes interrupted, long-peduncled; flowers opposite or alternate. — Low pine barrens, Florida, Georgia, and westward. July and Aug. — Stem 1°–2° high. Corolla 4″–5″ long.

2. **B. Americana,** L. Very rough, with bristly hairs; stem often branching above; leaves prominently 3-nerved, mostly toothed; the lower ones oblong, obtuse, the others lanceolate, acute; calyx-teeth acuminate. — Low pine barrens, Florida to Mississippi, and northward. July and Aug. — Stem 2°–3° high. Corolla 6″–7″ long.

16. SEYMERIA, Pursh.

Calyx 5-parted. Corolla bell-shaped, 5-lobed, the lobes oblong. Stamens 4, equal, the filaments woolly: anthers oblong, opening at the apex, awnless. Style simple, obtuse. Capsule ovate, flattened above, loculicidally 2-valved. Seeds numerous, covered by the loose hyaline testa. — Chiefly annuals. Stems erect, branching. Leaves opposite, pinnately divided. Flowers yellow, in terminal leafy-bracted racemes.

1. **S. tenuifolia,** Pursh. Smooth or nearly so; stem with elongated erect-spreading branches; leaves pinnate, the entire or lobed divisions filiform; capsule smooth, acute at the base, shorter than the pedicel. — Low pine barrens, Florida to North Carolina, and westward. Aug. and Sept. — Stem 2°–4° high.

2. **S. pectinata,** Pursh. Viscid-pubescent; stem with ascending branches; leaves pinnatifid, the entire obtuse divisions oblong-linear; capsule hairy, obtuse at the base, as long as the pedicel. — Dry sandy soil, Florida to South Carolina, and westward. July–Sept. — Stem 6′–18′ high.

17. MACRANTHERA, Torr.

Calyx 5-cleft, the lobes elongated. Corolla cylindrical, 5-toothed; the teeth reflexed. Stamens 4, equal, long-exserted, woolly: anthers large, oblong, approximate. Style simple, filiform, elongated: stigma minute, flat. Capsule ovate, loculicidally 2-valved, many-seeded. — A tall biennial, with pinnatifid opposite leaves, and showy orange-colored flowers, in terminal leafy racemes.

1. **M. fuchsioides,** Torr. Smoothish; stem branching, 4-sided; earliest leaves ovate-oblong, entire; those of the stem lyrate-pinnatifid, with the lobes denticulate; the uppermost toothed-serrate; pedicels slender, recurved, the upper ones longer than the floral leaves; flowers erect; calyx-lobes lanceolate, denticulate, rather shorter than the corolla. — Var. Lecontei has the shorter and narrower lobes of the calyx entire. (M. Lecontei, *Torr.*) — Marshy banks of pine-barren streams, Georgia, Florida, and westward. Sept. and Oct. — Stem 3°–5° high. Earliest leaves 6′–8′ long; those of the stem 2′–4′ long. Corolla 9″–12″ long. — The plant turns black in drying.

18. OTOPHYLLA, Benth.

Calyx deeply 5-cleft; the lobes leafy, unequal. Tube of the corolla dilated upward, sparse-hairy within, the lobes broad and entire. Stamens 4, didynamous, included: anthers oblong, awnless; those of the shorter stamens much smaller. Style elongated, dilated and flattened at the apex, entire. Capsule sub-globose, loculicidally 2-valved, many-seeded.

1. **O. Michauxii,** Benth. Hairy; stem erect, simple; leaves opposite, lanceolate, entire, sessile; the upper ones mostly 2-eared at the base; flowers opposite, in a leafy spike. (Gerardia auriculata, *Michx.*) — Low ground, Tennessee, North Carolina, and northward. Aug. ①? — Stem rigid, 2° high. Leaves 1′–2′ long. Corolla 9″–12″ long, purple.

19. DASYSTOMA, Raf. False Foxglove.

Calyx bell-shaped, 5-cleft, the lobes often toothed. Corolla tubular-bell-shaped, woolly within, 5-lobed, the lobes rounded. Stamens 4, didynamous: anthers oblong; the cells parallel and awned at the base. Style filiform, thickened and slightly 2-lobed at the apex. Capsule ovate, acute, loculicidally 2-valved, many-seeded. — Tall herbs, with opposite ovate or oblong mostly pinnately divided or lobed leaves, and large yellow flowers in a leafy raceme. Filaments woolly.

1. **D. pubescens,** Benth. Pubescent; leaves oblong, obtuse, entire, or the lowest ones pinnatifid; calyx longer than the pedicel, with oblong obtuse lobes. (Gerardia flava, *L.*) — Dry woods in the upper districts, Georgia, and northward. July–Sept. ↳ — Stem 2°–4° high, mostly simple. Leaves narrowed into a short petiole. Corolla 1½′ long.

2. **D. quercifolia,** Benth. Smooth and glaucous; stem simple or branched; lowest leaves twice-pinnatifid; the others pinnatifid, or the uppermost lanceolate and entire; calyx shorter than the pedicel, with lanceolate or subulate acute lobes. (Gerardia quercifolia, *Pursh.*) — Rich woods and river-banks, Florida to Mississippi, and northward. July–Sept. ↳ — Stem 3°–6° high. Lobes of the leaves toothed. Corolla 2′ long, the tube more slender and with smaller lobes than the preceding.

3. **D. pedicularia,** Benth. Smooth or somewhat pubescent; leaves ovate-lanceolate, pinnatifid; the lobes finely toothed; flowers opposite; calyx shorter than the pedicel; the toothed lobes as long as the tube. (Gerardia pedicularia, *L.*) — Dry sandy soil, chiefly in the upper districts, Mississippi to North Carolina, and northward. July and Aug. — Stem 2° high, much branched. Leaves about 2′ long, the lobes numerous and short. Corolla 12″–15″ long, with a rather slender tube and short lobes.

4. **D. pectinata,** Benth. Pubescent or somewhat villous; leaves lanceolate or ovate-lanceolate, finely pinnatifid and toothed; the earliest ones entire; flowers alternate, scattered on the outside of the ascending branches; calyx longer than the pedicel; the pinnatifid lobes longer than the tube. — Dry sand-ridges in the pine barrens, Florida to North Carolina. Aug. and Sept. ② —

Stem 2° – 4° high, widely branched. Corolla 1½′ long, with a wider tube and larger lobes than in No. 3.

20. GERARDIA, L.

Calyx bell-shaped, 5-toothed; the teeth short, acute, entire. Corolla tubular-bell-shaped, 5-lobed, the lobes rounded, spreading; the throat oblique. Stamens 4, didynamous, the longer ones commonly woolly: anthers woolly, connivent in pairs; the cells diverging and pointed at the base. Style slender, dilated, and flattened upward. Capsule ovoid or globose, smooth, loculicidal. Seeds numerous, angled, reticulated. — Chiefly slender branching annuals. Leaves opposite, or rarely alternate, narrow, entire. Flowers in the axils of the upper leaves, showy, purple; the tube of the corolla mostly dotted with red and yellow, often woolly at the throat.

** Perennial.*

1. **G. linifolia,** Nutt. Smooth; branches elongated, erect; leaves erect, linear; peduncles as long as the leaves, or the uppermost longer; calyx truncate, with minute teeth; lobes of the corolla nearly equal, fringed on the margins; capsule large (3″ wide), globose, one third longer than the calyx. — Low pine barrens, Florida to North Carolina, and westward. Sept. — Stem 2° – 3° high. Leaves 1′ long. Corolla 1′ long, pubescent.

** * Annuals.*

+ Corolla small, the 2 upper lobes short, truncate and erect.

2. **G. divaricata,** n. sp. Stem 6′ –12′ high, smooth, widely branched from the base; leaves all opposite, spreading or reflexed, filiform, roughish on the margins, ¾′ long; the uppermost minute; pedicels all opposite, setaceous, spreading, the upper ones 4 – 5 times as long as the leaves; calyx-teeth subulate, one third as long as the tube; corolla ½′ long, the lobes ciliate; capsule ovoid, twice as long as the calyx. — Low sandy pine barrens. West Florida. Sept.

3. **G. filicaulis.** Stem 6′ – 12′ long, filiform, reclining, smooth and glaucous; branches alternate, setaceous; leaves minute, 1″ long, subulate, rough; flowers few, terminal; calyx-teeth triangular, one fourth the length of the tube; corolla 4″ – 5″ long, compressed, the lobes slightly fringed; capsule globose, one third longer than the calyx. (G. aphylla, var. filicaulis, *Benth.?*) — Low grassy pine barrens, West Florida. Sept.

+ + Lobes of the corolla nearly equal, spreading.

++ Pedicels as long, or twice as long, as the calyx, shorter than the leaves.

4. **G. aphylla,** Nutt. Stem 2° – 3° high, smooth, 4-angled, sparingly branched near the summit; leaves minute, 1″ long, subulate, appressed; flowers mostly alternate, on one side of the spreading branches; pedicel as long as the calyx; calyx-teeth minute, obtuse; corolla ½′ long, hairy within, the upper lobes reflexed; capsule globose, 2″ long, twice as long as the calyx. — Low sandy pine barrens, Florida to North Carolina, and westward. Sept.

5. **G. purpurea,** L. Stem 1° – 3° high, smooth, the branches elongated; leaves opposite, broadly or narrowly linear, rough above, 1′ – 1½′ long; flowers opposite or nearly so, the stout pedicels as long as the calyx; calyx-teeth con-

spicuous, triangular, sometimes half as long as the tube, spreading; corolla 8″ – 10″ long, the lobes minutely fringed; capsule globose, one third longer than the calyx. — Low ground, Florida to Mississippi, and northward. Sept.

Var. **fasciculata.** Stem taller (3° – 5°), much branched above, rough; leaves rough on both sides, clustered, the uppermost, like the flowers, alternate; calyx-teeth more pointed; corolla larger. (G. fasciculata, *Ell.*) — Brackish soil, along the coast, Florida to South Carolina.

6. **G. maritima,** Raf. Smooth; stem 8′ – 16′ high, 4-angled, with numerous short and leafy branches near the base; leaves fleshy, linear, obtuse, opposite, the upper ones small and remote; pedicels as long as the calyx and the floral leaves; calyx-teeth short, obtuse; corolla 6″ – 8″ long, slightly oblique at the throat, the upper lobes fringed, and villous within; capsule globose, twice as long as the calyx. — Salt marshes, Florida, and northward.

Var. **major.** Stem 2° high, much branched; leaves flat, acute; floral leaves longer than the pedicels; calyx-teeth triangular, acute; corolla and capsule larger. — Brackish marshes, Apalachicola, Florida. — Corolla 1′ long.

7. **G. setacea,** Ell. Very smooth; stem 1° – 2° high, much branched, slender; leaves 1′ long, setaceous, opposite; pedicels stout, club-shaped, three times as long as the calyx, mostly alternate, or terminating the setaceous peduncle-like branchlets; calyx-teeth short, subulate; corolla 1′ long, woolly within, the rounded lobes thickly fringed; capsule ovoid, barely exceeding the calyx. (G. Plukenetii, *Ell.* ?) — Damp or dry sandy pine barrens, Florida to South Carolina. Sept.

++ ++ *Pedicels much longer than the calyx, commonly longer than the leaves.*

8. **G. tenuifolia,** Vahl. Stem smooth, 1° – 1½° high, much branched; leaves linear, smooth, or rough on the margins, 1′ – 1½′ long; pedicels filiform, about as long as the leaves, opposite; calyx-teeth broadly subulate, ¼ as long as the tube; corolla ½′ long; capsule globose, as long as the calyx. — Var. FILIFORMIS. Stem and pedicels rough; leaves filiform, clustered; corolla larger (¾′ long). — Light soil, Florida to Mississippi, and northward. Sept.

9. **G. filifolia,** Nutt. Stem 1° – 2° high, much branched, smooth; leaves very numerous, all alternate and clustered, smooth, fleshy and somewhat club-shaped; pedicels alternate, twice as long as the leaves; calyx-teeth subulate, one fourth the length of the 5-angled tube; corolla ¾′ long; capsule ovoid, as long as the calyx. — Low sandy pine barrens, Georgia and Florida. Sept.

10. **G. parvifolia.** Stem rough, striate, 12′ – 18′ high, the slender branches erect; leaves 4″ – 6″ long, opposite or alternate, linear, very rough, rather obtuse; pedicels filiform, 2 – 4 times as long as the minute floral leaves; calyx-teeth minute, obtuse; corolla ½′ long, pale purple or white. (G. setacea, var. parvifolia, *Benth.*?) — Grassy margins of ponds, Florida, and westward. Sept. — Unlike the other species, this remains unchanged in drying.

21. CASTILLEIA, L.

Calyx tubular, compressed, cleft at the summit; the lobes entire or 2-cleft. Tube of the corolla included in the calyx; the upper lip long, narrow, curved,

laterally compressed, and enclosing the four didynamous stamens; the lower lip short, 3-lobed: anther-cells oblong-linear, unequal; the outer one fixed by the middle, the inner pendulous. Capsule loculicidal, many-seeded. — Herbs, with alternate entire or incisely-lobed leaves, the uppermost colored. Flowers in leafy spikes or racemes.

1. **C. coccinea,** Spreng. Stem hairy; radical leaves clustered, nearly entire; those of the stem pinnatifid, with the lobes linear; the floral ones 3-lobed, bright scarlet at the summit; corolla greenish-yellow. — Damp soil in the upper districts. June – Aug. ② — Stem 1° – 1½° high.

22. SCHWALBEA, L.

Calyx tubular, oblique, 10 – 12-ribbed, 4-toothed, the upper tooth very small, the lowest elongated, 2-cleft. Corolla bilabiate; the upper lip oblong, arched, enclosing the four didynamous stamens; the lower rather shorter, obtusely 3-lobed: anther-cells parallel, equal. Capsule oblong, acute, loculicidally 2-valved, many-seeded.

1. **S. Americana,** L. — Sandy pine barrens, Florida to Mississippi, and northward. May and June. ♃ — Stem simple, 1° – 1½° high, pubescent. Leaves alternate, lanceolate, entire, sessile; the lower ones oblong, the uppermost linear, small. Flowers in a spiked raceme. Corolla 1′ long, yellow and purple.

23. PEDICULARIS, L.

Calyx tubular, more or less cleft at the apex, variously 2 – 5-toothed. Corolla bilabiate; the upper lip compressed, curved and bearded at the apex, enclosing the 4 didynamous stamens; the lower lip 2-crested above, 3-lobed, with the lateral lobes larger and rounded: anthers transverse. Capsule ovate or lanceolate, compressed, the upper portion empty. — Herbs, with finely and pinnately divided leaves. Flowers in leafy racemes or spikes.

1. **P. Canadensis,** L. Stem simple, hairy (6′ – 9′ high); leaves alternate, smooth, oblong or lanceolate, pinnatifid; the lobes oblong, simply or doubly crenate; spike dense, capitate, elongated in fruit; corolla pale yellow and purple; the upper lip hooked, 2-awned under the apex; capsule lanceolate, exserted. — Shady woods and banks, Florida to Mississippi, and northward. March and April. ♃ — Stem bearing slender leafy and rooting runners. Fruiting spike 3′ – 5′ long.

2. **P. lanceolata,** Michx. Stem tall (1° – 3°), smooth, simple or sparingly branched; leaves nearly opposite, lanceolate, pinnately toothed, the teeth crenate; spike dense; corolla pale yellow, the upper lip curved, awnless, the lower erect; capsule ovate, scarcely exserted. — Swamps on the mountains of North Carolina, and northward. Aug. and Sept.

24. MELAMPYRUM, Tourn.

Calyx bell-shaped, with 4 subulate teeth. Corolla bilabiate; the tube dilated above; the upper lip short, compressed, obtuse, straight; the lower rather longer,

spreading, biconvex, with three short lobes. Stamens 4, didynamous, under the upper lip: anthers approximate, oblong, hairy; the cells nearly equal, slightly pointed at the base. Ovary with 2 ovules in each cell. Capsule compressed, oblique, loculicidally 2-valved, 1 – 4-seeded. — Annual herbs, with opposite lanceolate or linear leaves, and solitary axillary flowers.

1. **M. Americanum,** Michx. Stem naked below, leafy and commonly branched above the middle; leaves lanceolate, entire, short-petioled; the upper ones broader and sharply toothed at the base; flowers greenish-yellow. — Dry woods along the mountains, Georgia, and northward. Aug. — Stem 6′ – 12′ high. Leaves 2′ long. Flowers 4″ – 5″ long.

Order 92. ACANTHACEÆ. (Acanthus Family.)

Chiefly herbs, with opposite (rarely alternate or clustered) undivided exstipulate leaves, and bracted, often showy flowers. — Calyx 5-parted. Corolla more or less bilabiate, 5-lobed, twisted in the bud. Fertile stamens 2 or 4, inserted on the tube of the corolla: anthers 2-celled. Ovary free. Style single: stigma entire or 2-lobed. Capsule loculicidally 2-valved, 2-celled, 4 – several-seeded, opening elastically. Seeds anatropous, flat, rounded, without albumen, mostly supported by curved appendages of the placentæ. Radicle inferior. — Stems commonly swollen between the joints.

Synopsis.

* Capsule oblong, bearing the seeds at the base. Appendages of the placentæ none.

1. ELYTRARIA. Spike borne on a closely-bracted scape. Leaves radical.

* * Capsule club-shaped, bearing the seeds above the base, appendaged.

2. DIPTERACANTHUS. Corolla nearly regular. Stamens 4. Flowers axillary, solitary or clustered.
3. DIANTHERA. Corolla bilabiate. Stamens 2. Cells of the anthers placed one lower than the other. Flowers in long-peduncled axillary spikes.
4. DICLIPTERA. Corolla bilabiate, resupinate. Stamens 2. Cells of the anthers placed one behind the other. Flowers in leafy-bracted heads or clusters.

1. ELYTRARIA, Vahl.

Calyx 4 – 5-parted, the lateral lobes narrower. Corolla salver-shaped or bilabiate, 5-lobed. Fertile stamens 2, the 2 anterior ones sterile: anther-cells parallel. Stigma 2-cleft. Capsule sessile, about 8-seeded; the seeds fixed near the base of the capsule, without appendages. — Low herbs. Leaves all radical, clustered. Scape covered with imbricated bracts. Flowers spiked, 2-bracted.

1. **E. virgata,** Michx. Leaves oval or oblong, narrowed downward, entire or wavy on the margins, smooth or pubescent; bracts of the scape alternate, rigid, lanceolate, acuminate, clasping; those of the spike ovate; corolla white, salver-shaped, the lobes nearly equal; capsule cylindrical. — Banks of rivers, Florida to South Carolina. Aug. ♃ — Scapes 6′ – 12′ high. Leaves 2′ – 4′ long.

2. DIPTERACANTHUS, Nees.

Calyx 2-bracted, 5-parted, with linear or bristle-like lobes. Corolla funnel-shaped, 5-lobed; the lobes equal, rounded. Stamens 4, didynamous, included: anthers sagittate. Style simple, or 2-cleft at the apex. Capsule narrowed below the middle, flattened contrary to the partition, 4 – 12-seeded. Seeds borne above the middle, supported by curved appendages of the placentæ. — Perennial herbs, with tumid joints, entire opposite leaves, and axillary solitary or clustered nearly sessile flowers. Corolla white, blue, or purple.

§ 1. CALOPHANES. — *Anther-cells pointed at the base: style simple: capsule 4-seeded.*

1. **D. oblongifolius.** Pubescent and somewhat hoary; stem 4-angled, erect from a creeping base, simple or sparingly branched; leaves nearly sessile, oval or obovate, obtuse, the upper ones narrower and often acute; flowers solitary or 2 – 3 in a cluster; calyx-lobes subulate-setaceous, as long as the oblong bracts, and tube of the spotted purple corolla. (Ruellia oblongifolia, *Michx.*) — Dry sandy pine barrens, Florida to South Carolina, and westward. June – August. — Stem 6′ – 12′ high. Leaves ½′ – 1′ long. Corolla 1′ long, rather exceeding the leaves.

2. **D. riparius,** n. sp. Stem minutely pubescent, erect from a creeping base, simple, slender; leaves smooth, membranaceous, oblong, obtuse, slightly crenate, tapering into a long and slender petiole; flowers clustered, sessile; calyx-lobes subulate-setaceous, shorter than the spatulate-oblong bracts; corolla white, 3 – 4 times shorter than the leaves. — Shady banks of Little River, Middle Florida. June and July. — Stems 1° – 1½° high. Leaves 1′ – 1½′ long. Corolla ½′ long.

3. **D. humistratus.** Stem smooth, diffuse, creeping; leaves oblong-oval, entire, narrowed into a petiole; flowers nearly sessile, solitary or 2 – 3 in a cluster; bracts oblong-spatulate, shorter than the setaceous calyx-lobes; capsule lanceolate, smooth. (Ruellia humistrata, *Michx.*) — Grassy places, Florida to South Carolina. — Plant small. Leaves ½′ long.

4. **D. linearis,** Torr. & Gray. Small, rough-pubescent; stem prostrate, diffuse, very leafy; leaves oblong-linear, entire, narrowed toward the base, obtuse; calyx-lobes setaceous, hairy; bracts similar to the leaves; capsule oblong, 4-angled, at length 4-valved, 2 – 4-seeded. — South Florida. — Stem 6′ long. Leaves 4″ – 6″ long.

§ 2. DIPTERACANTHUS. — *Anther-cells pointless: style 2-cleft at the apex: capsule 8 – 12-seeded.*

5. **D. ciliosus,** Nees. Hirsute with white hairs; leaves oval or ovate-oblong, nearly sessile; flowers solitary or 2 – 3 in a cluster; tube of the corolla twice as long as the setaceous calyx-lobes, and much longer than the short funnel-shaped throat; capsule smooth. (Ruellia ciliosa and R. hybrida, *Pursh.*) — Dry soil, Georgia, near Savannah, *Pursh.*, and westward. July and Aug. — Stem varying from a few inches to 3° high. Leaves 1′ – 2′ long. Corolla 2′ long, pale blue.

6. **D. strepens,** Nees. Smooth, pubescent, or hairy; leaves varying from lanceolate to orbicular, mostly narrowed into a petiole; flowers sessile or peduncled; tube of the corolla barely longer than the linear or linear-lanceolate hairy calyx-lobes, and about the length of the funnel-shaped throat; capsule smooth. (Ruellia strepens, *L.*) — Dry rich soil, Florida, and northward. June – Sept. — Stem 2′ – 3° high. Leaves 1′ – 4′ long. Corolla 1′ – 2′ long, blue or purple. A polymorphous species. Later flowers sometimes fruiting in the bud.

7. **D. noctiflorus,** Nees. Closely pubescent; stem simple, rigid; leaves oblong or lanceolate, sessile, entire or slightly toothed; flowers solitary, peduncled; corolla large; the elongated tube twice as long as the linear hairy calyx-lobes; capsule pubescent. — Low grassy pine barrens, Florida, Georgia, and westward. July and Aug. — Stem 1° high. Corolla 2′ – 4′ long, white.

3. DIANTHERA, Gronov.

Calyx 5-parted. Corolla bilabiate; the upper lip emarginate; the lower 3-lobed, rugose or veiny in the middle, spreading. Stamens 2: anther-cells separated, one placed lower down than the other. Stigma simple, acute. Capsule flattened, narrowed downward, bearing the seeds above the middle. Seeds mostly 4, supported by the appendages of the placentæ. — Perennial smooth herbs, with opposite entire leaves, and short-bracted mostly alternate flowers in long-peduncled axillary spikes.

1. **D. Americana,** L. Stem tall, angled; leaves long, linear-lanceolate; spikes oblong, dense or somewhat capitate, on peduncles as long as the leaves. (Justicia ensiformis, *Ell.*? J. pedunculosa, *Michx.*) — In slow-flowing streams, South Carolina, and northward. July and Aug. — Stem 2° high. Leaves and peduncles 4′ – 6′ long. Spike ½′ long. Flowers pale purple.

2. **D. ovata,** Walt. Stem low (4′ – 8′ high), 4-angled; leaves ovate-lanceolate, rather acute, narrowed into a short petiole; the lowest small, lanceolate; spikes 3 – 4-flowered, on simple peduncles shorter than the leaves; corolla small, pale purple, the lower lip striped with deeper lines. (Justicia humilis, *Michx.*) — Muddy banks of streams, Florida to South Carolina. — Leaves 2′ – 4′ long, 1′ – 1½′ wide.

Var. **lanceolata.** Stem taller (1° – 1½°); leaves smaller, lanceolate, acuminate, nearly sessile; peduncles longer than the leaves; spikes many-flowered, 1-sided, often branching. — River-banks, Florida. July.

Var.? **angusta.** Leaves linear or linear-lanceolate, reflexed, the lower ones very remote; peduncles as long as the leaves; spikes several-flowered, the lower flowers often opposite. — Pine-barren ponds, Florida. May. — Stem 1° high. Leaves 1′ – 2′ long. Corolla 4″ – 5″ long.

3. **D. crassifolia,** n. sp. Stem rigid, angled; leaves fleshy, linear, channelled, acute; the lower distant, small and obtuse; peduncles stout, erect, longer than the leaves, exceeding the stem; spike few-flowered; corolla large, bright purple; the lower lip striped with deeper lines; capsule 2-seeded; seeds circular, smooth. — Wet pine barrens, Apalachicola, Florida. April and May. — Stem 6′ – 12′ high. Leaves 4′ – 6′ long. Peduncles 4′ – 9′ long. Corolla and capsule 1′ long.

4. DICLIPTERA, Juss.

Calyx 5-parted, mostly leafy-bracted. Corolla bilabiate, mostly reversed; the lower lip 3-lobed; the upper 2-cleft or entire. Stamens 2: anther-cells equal, one placed behind the other. Capsule oblong or oval, bearing 2 or 4 seeds below the middle; the partitions at length free from the valves. — Herbs, with simple leaves, and purple, scarlet, or white flowers in axillary and terminal heads or spike-like cymes.

1. **D. brachiata,** Spreng. Smooth or nearly so; stem 6-angled, with numerous spreading branches; leaves thin, oblong-ovate, acuminate, abruptly contracted into a long and slender petiole; spikes solitary or 2 – 3 together, interrupted, unequal; bracts oblong, mucronate, narrowed at the base, at length inflated; corolla small, purple. (Justicia brachiata, *Pursh.*) — River-banks, Florida to North Carolina. July and Aug. — Stem 1° – 2° high.

2. **D. Halei,** Riddell. Stem tomentose, mostly simple; leaves ovate-lanceolate, acuminate but rather obtuse, tapering into a petiole, sprinkled on the upper surface and veins beneath with very short hairs; the lower ones smaller and obtuse; spikes axillary and terminal, short-peduncled, leafy at the base, compact, few-flowered; bracts oblong or oval, mucronate, short-stalked, and, like the linear-spatulate bracteoles, and subulate calyx-lobes, fringed with long hairs; capsule oval, 4-seeded. (Justicia lætevirens, *Buckley?* Rhytoglossa viridiflora, *Nees.*) — Shady banks of rivers, Florida, and westward. June – September. — Stem ½° – 2° high. Leaves 2′ – 4′ long. Corolla 4″ – 5″ long, white.

3. **D. assurgens,** Juss. Smooth or minutely pubescent; stem angled, much branched; leaves elliptical, acute, on slender petioles; flowers mostly single, scattered in 1-sided spike-like cymes; bracts small, unequal, the interior ones subulate, the exterior larger and somewhat spatulate; calyx-lobes subulate, unequal; corolla (scarlet) curved, nearly equally 2-lipped; the upper lip entire, the lower minutely 3-toothed; anthers slightly exserted; style hair-like, elongated. — South Florida. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Corolla 9″ – 12″ long.

ORDER 93. VERBENACEÆ. (VERVAIN FAMILY.)

Chiefly herbs or shrubs, with 4-angled mostly rough stems, and opposite and exstipulate leaves. Flowers spiked, capitate, or cymose. — Calyx 4 – 5-cleft or parted, free. Corolla regular and salver-shaped, or more or less bilabiate, 4 – 5-lobed. Stamens 4 – 5, inserted on the tube of the corolla: anthers 2-celled. Ovary entire, 1 – 8-celled, with 1 or (in Avicennia) 2 ovules in each cell. Style simple, terminal. Fruit dry or baccate, 1 – 8-celled, commonly separable into as many 1-seeded indehiscent nutlets. Albumen scarce or none. Embryo straight.

Synopsis.

Tribe I. **VERBENEÆ.** — Ovule solitary, erect from the base of the cell, anatropous. Radicle pointing downward. Flowers in spikes or heads.

* Herbs. Fruit dry.

1. PRIVA. Stamens 4. Fruit of 2 two-celled nutlets, enclosed in the inflated calyx.
2. VERBENA. Stamens 4. Fruit of 4 one-celled nutlets. Fruiting calyx not inflated.
3. STACHYTARPHA. Stamens 2. Fruit of 2 one-celled nutlets, imbedded in excavations of the thickened rachis.
4. LIPPIA. Stamens 4. Fruit of 2 one-celled nutlets. Flowers capitate.

* * Shrubs. Fruit fleshy or pulpy.

5. LANTANA. Fruit of 2 one-celled nutlets. Flowers capitate.
6. CITHAREXYLUM. Fruit of 2 two-celled nutlets surrounded by the cup-shaped calyx. Flowers spiked.
7. DURANTA. Fruit of 4 two-celled nutlets enclosed in the beaked calyx.

Tribe II. **VITEÆ.** — Ovule solitary, suspended from the inner angle of the cell, amphitropous. Radicle pointing downward. Flowers in cymes. Fruit baccate.

8. CALLICARPA. Fruit of 4 separate 1-celled nutlets. Shrubs.

Tribe III. **AVICENNIÆ.** — Ovules by pairs, suspended from the apex of the cell, amphitropous. Radicle pointing downward. Flowers in imbricated spikes or heads. Fruit capsular.

9. AVICENNIA. Embryo large, germinating within the capsule. Trees.

Tribe IV. **PHRYMEÆ.** — Ovule solitary, erect from the base of the 1-celled ovary, orthotropous. Radicle pointing upward. Cotyledons convolute around their axis. Flowers in elongated slender spikes. Fruit a caryopsis.

10. PHRYMA. Corolla bilabiate. Stamens 4, didynamous. Fruit reflexed.

1. PRIVA, Adans.

Calyx tubular, 5-toothed. Corolla salver-shaped, 5-cleft. Stamens 4, didynamous, included. Ovary 4-celled. Style persistent. Fruit dry, separating into two 2-celled spiny-angled nutlets, and included in the inflated membranaceous calyx. — Perennial herbs, with serrate petioled undivided leaves, and minute flowers in a loose slender spike.

1. **P. echinata,** Juss. Smooth or hispid; stem branching; leaves cordate-ovate, acute, coarsely serrate; flowers alternate; fruiting calyx bristly with hooked hairs, ovoid; fruit ovate, 4-angled, the angles armed with tubercular spines, pointed by the persistent bent style. — South Florida. — Leaves 1′–2′ long. Spikes 6′–9′ long, terminal and in the forks of the stem.

2. VERBENA, L. Vervain.

Calyx tubular, 5-ribbed, 5-toothed. Corolla salver-shaped, bearded in the throat; the limb somewhat bilabiate, 5-lobed. Stamens 4, didynamous, included. Stigma 2-lobed. Ovary 4-celled. Fruit of 4 separate 1-seeded nutlets. — Herbs, with serrate or pinnately divided leaves, and mostly small flowers in lengthening slender spikes.

* *Anthers of the longer stamens tipped with a gland-like appendage: flowers showy.*

1. **V. Aubletia,** L. Hairy; stem creeping at the base, ascending, forking; leaves ovate-oblong, 3-cleft, with the lobes toothed, narrowed into a slender petiole; the lower ones smaller, rounded, toothed; spikes terminal and in the forks of the stem, long-peduncled, closely flowered; calyx long, slender, the unequal teeth subulate; corolla showy, purple. — Dry light soil, Florida to South Carolina, and westward. May – August. — Stem 6′ – 12′ high. Corolla $\frac{1}{2}$′ long.

* * *Anthers without appendages: flowers small.*

+– *Leaves undivided.*

2. **V. urticifolia,** L. Rough-hairy; stem tall, branching; leaves ovate-oblong, acute or acuminate, mucronate-serrate, contracted at the base into a long petiole; spikes very long, filiform, axillary and terminal; flowers minute, white or pale blue. — Low ground, Florida to Mississippi, and northward. Aug. – Oct. — Stem 2° – 5° high. Leaves very rough, 2′ – 6′ long.

3. **V. hastata,** L. Rough-hairy; stem branching; leaves oblong-lanceolate, acuminate, coarsely and sharply serrate, tapering into a long petiole; the lowest broader, and often hastate-lobed at the base; spikes linear, short, close-flowered; flowers violet. (V. paniculata, *Lam.*) — Low ground, in the upper districts, Mississippi, and northward. July – Sept. — Stem 2° – 3° high. Flowers larger than in No. 2.

4. **V. angustifolia,** Michx. Rough-hairy; stem simple or branched above; leaves lanceolate or linear-lanceolate, rather obtuse, coarsely serrate, tapering from near the apex to the sessile base; spikes linear, terminal, close-flowered; flowers purple. — Dry woods, Florida to Mississippi, and northward. July – Sept. — Stem 6′ – 12′ high. Flowering spikes 2′ – 3′ long.

5. **V. Caroliniana,** Michx. Rough with short rigid hairs; stem simple, ascending; leaves oblong, or the lowest oblong-obovate, acute or obtuse, sharply and doubly serrate, entire toward the narrowed base, sessile; spikes 1 – 3, elongated; flowers flesh-color. — Dry pine barrens, Florida to South Carolina, and westward. Aug. — Stem 4′ – 6′ high, shorter than the spikes. Leaves 1′ – 2′ long. Nutlets tardily separating.

+– +– *Leaves pinnatifid.*

6. **V. officinalis,** L. Stem smoothish, erect, branching; leaves lanceolate or oblong, pinnately lobed or toothed, narrowed and entire near the base, sessile, pubescent beneath; spikes linear or filiform, panicled; bracts shorter than the calyx; flowers purple. (V. spuria, *L.*) — Waste ground, chiefly in the upper districts. Introduced. July and Aug. — Stem 1° – 3° high.

7. **V. canescens,** Kunth? Hirsute and hoary; stems numerous, prostrate, diffuse; leaves small, pinnately toothed or lobed, oblong, narrowed into a petiole; spikes terminal, dense; bracts linear, entire, spreading, much longer than the flowers, the lower ones recurved; flowers purple. — Streets of Apalachicola, Florida, and along the Central Railroad in the middle districts of Georgia. Aug. — Stems 4′ – 6′ long. Spikes 3′ – 6′ long. Leaves 6″ – 9″ long.

3. STACHYTARPHA, Vahl.

Calyx tubular, compressed, 5-toothed. Corolla salver-shaped, 5-cleft, hairy in the throat. Stamens 4, didynamous, the upper pair sterile. Ovary 2-celled. Stigma capitate. Fruit of two 1-celled 1-seeded nutlets. — Herbs or shrubs, with 4-angled forking stems, and opposite undivided leaves. Flowers in straight and rigid spikes, imbedded in excavations of the thickened rachis, and covered by the imbricated bracts.

1. **S. Jamaicensis,** Vahl. Herbaceous, smoothish; stems ascending; leaves oblong, coarsely serrate, tapering into a slender margined petiole; spikes linear, terete, elongated; bracts lanceolate, acuminate, appressed, with scarious rough margins; flowers small, blue. — South Florida. — Leaves 2′ – 4′ long. Spikes 8′ – 12′ long.

4. LIPPIA, L.

Calyx tubular, membranaceous, 2 – 4-toothed. Corolla tubular-funnel-shaped, somewhat bilabiate, 5-cleft. Stamens 4, didynamous, included. Ovary 2-celled, 2-ovuled. Style short: stigma obliquely capitate. Fruit of two 1-seeded separable nutlets. — Herbs, with 4-angled stems, opposite or whorled simple leaves, and small flowers in dense spikes or heads.

1. **L. nodiflora,** Michx. Stem creeping, finely pubescent, the flowering branches erect; leaves obovate, oblong, or lanceolate, rough, tapering and entire below the middle, serrate above; heads dense, globose in flower, oblong or cylindrical in fruit, on axillary peduncles which are 2 – 3 times as long as the leaves; flowers white or purple. (Zapania nodiflora, *Lam.*) — Damp sandy soil near the coast, Florida to Mississippi, and northward. May – Sept. — Flowering stems 6′ – 12′ high. Leaves 1′ long.

5. LANTANA, L.

Calyx minute, slightly 4-toothed. Corolla bilabiate; the upper lip notched or entire; the lower 3-lobed. Stamens 4, didynamous, included. Style short: stigma oblique. Fruit fleshy or berry-like, of two mostly rugose or tuberculate 1-seeded nutlets, enclosed in the enlarged membranaceous calyx. — Shrubs, with simple rugose serrate leaves, and axillary peduncled capitate bracted flowers.

1. **L. involucrata,** L. Var. **Floridana.** Stem much branched, pubescent; leaves small ($\frac{1}{2}'$ – 1′), oval or obovate, crenate, rounded at the apex, densely pubescent when young, at length rough above, contracted into a slender petiole; peduncles 2 – 3 times as long as the leaves, the upper ones corymbose; heads small; bracts ovate, as long as the tube of the small (2″ – 3″) white? corolla; the outer ones empty and narrower, involucrate. — South Florida.

2. **L. Camara,** L. Stem pubescent, hirsute, or spiny; leaves ovate-oblong, acuminate, crenate, short-petioled, very rough above, pubescent beneath; peduncles as long as the leaves; bracts lanceolate, half as long as the tube of the yellow corolla; involucre none. — St. Mary's, Georgia, *Elliott.* June – Nov. — Shrub 2° – 4° high. Leaves 2′ long.

6. CITHAREXYLUM, L.

Calyx cup-shaped or somewhat tubular, slightly 5-toothed. Corolla salver-shaped, 5-lobed, the throat pubescent. Stamens 4 – 5, included: anthers sagittate. Ovary 4-celled. Style thickened upward: stigma notched. Drupe juicy, of two 2-seeded bony nutlets, partly included in the enlarged indurated calyx. — Trees or shrubs, with entire mostly glandular-petioled leaves, and small flowers in slender spikes or racemes.

1. **C. villosum,** Jacq. Branches 4-angled, hairy or tomentose; leaves somewhat coriaceous, oblong or oblong-obovate, obtuse, entire, tomentose and pale beneath, roughened and shining above, narrowed into a short biglandular petiole; spikes declining, loose-flowered; corolla smooth externally, the tube as long as the calyx, the lobes rounded or notched; stamens 4; drupe globose, half included in the enlarged calyx. — South Florida. — Leaves 2′ – 5′ long. Spikes 2′ – 4′ long. Corolla 2″ long. Drupe 4″ in diameter.

7. DURANTA, L.

Calyx tubular, 5-ribbed, 5-toothed. Corolla somewhat bilabiate, pubescent in the throat; the upper lip 2-lobed; the lower 3-lobed. Stamens 4, included. Ovary 8-celled. Style short: stigma oblique. Drupe baccate, of four 2-seeded bony nutlets, included in the enlarged beak-pointed calyx. — Shrubs. Leaves opposite or whorled, entire, dotted. Flowers showy, in axillary and terminal racemes.

1. **D. Plumieri,** Jacq. Spineless or spiny; branches and racemes pubescent; leaves oblong or obovate, obtuse, entire, or serrate near the apex, tapering into a slender petiole; racemes curving, loose-flowered; lower bracts leafy; drupe globose. — South Florida. — Leaves 1′ – 2′ long. Corolla 5″ long, lilac. Drupe yellow.

8. CALLICARPA, L. French Mulberry.

Calyx small, cup-shaped, 4-toothed. Corolla funnel-shaped, 4-cleft. Stamens 4, equal, exserted. Ovary 4-celled. Style slender; stigma capitate. Drupe baccate, of four separate 1-seeded nutlets. — Shrubs, with a glandular or scurfy mostly stellate pubescence. Leaves opposite, undivided, serrate, petioled. Flowers in axillary forked cymes.

1. **C. Americana,** L. Branches and leaves scurfy; leaves ovate-oblong, acute at each end, crenate-serrate, rough above, hoary beneath, becoming smoothish; cymes many-flowered, as long as the petioles; corolla blue; drupe purple. — Dry open woods, Florida to North Carolina, and west to Mississippi. June and July. — Shrub 3° – 8° high. Leaves 4′ – 6′ long.

9. AVICENNIA, L.

Calyx of 5 imbricated concave sepals. Corolla bell-shaped, 5-lobed. Stamens 4, equal, exserted: anthers 2-celled. Ovary 2-celled, with two collateral amphitropous suspended ovules in each cell. Style short or none. Capsule

ovate, coriaceous, indehiscent. Embryo large, naked, germinating within the capsule. — Low evergreen trees, with extensively creeping roots, forming impenetrable thickets on the muddy shores of the sea. Leaves opposite, entire, smooth above, hoary and velvety beneath. Flowers in dense heads, on axillary and terminal peduncles.

1. **A. oblongifolia,** Nutt.? Tomentose throughout, except the upper surface of the rigid oblong obtuse short-petioled leaves; peduncles three together, terminal, shorter than the leaves; heads oval; sepals and bracts orbicular; corolla tomentose on both sides; style exserted. — Key West. Oct. — Branches terete. Leaves 2′–3′ long. Peduncles 4-angled. Heads ½′ long. Corolla 3″ long.

2. **A. tomentosa,** Jacq. Leaves obovate-elliptical, very obtuse, tapering into a petiole, smooth above, white-tomentose beneath; spikes short, the lower flowers mostly scattered; corolla-lobes truncate, silky below, smooth above; stigma nearly sessile. — South Florida. *Nuttall.* — Leaves 3′ long. Corolla white.

10. PHRYMA, L. Lopseed.

Calyx tubular, bilabiate; the upper lip of 3 bristle-pointed teeth; the lower shorter, 2-cleft. Corolla bilabiate; the upper lip notched, the lower longer, 3-lobed. Stamens 4, didynamous, included. Style slender: stigma 2-cleft. Fruit oblong, pointed by the persistent style. — A perennial branching pubescent herb, with opposite ovate or oblong coarsely-serrate long-petioled leaves, and small opposite purplish flowers in a slender terminal spike. Fruit reflexed.

1. **P. leptostachya,** L. — Rich shaded soil, Florida to Mississippi, and northward. July and Aug. — Stem 1°–3° high, tumid above the joints. Leaves 3′–5′ long.

Order 94. LABIATÆ. (Mint Family.)

Herbs or shrubs, with opposite 4-angled branches, and opposite exstipulate leaves. Flowers opposite, solitary, or oftener in close axillary spiked or capitate cymes (whorls). Calyx 3–10-cleft or toothed. Corolla more or less bilabiate, 4–5-lobed. Stamens inserted on the tube of the corolla, diandrous or didynamous. Ovary 4-cleft or 4-parted, the lobes surrounding the base of the single style. Ovule solitary, erect, anatropous. Fruit of 1–4 one-seeded nutlets. Albumen scarce or none. Embryo straight or (in Scutellaria) curved. Radicle short, inferior. — Plants commonly dotted with minute glands, which are filled with an aromatic volatile oil.

Synopsis.

Tribe I. **OCIMOIDEÆ.** — Stamens 4, didynamous; the lower pair longer, reclining on the lower lobe of the corolla. Anthers 2-celled. Nutlets smooth, distinct.

1. OCIMUM. Upper lobe of the calyx broad, decurrent. Lobes of the corolla nearly equal.
2. HYPTIS. Calyx-teeth nearly equal. Lowest lobe of the corolla longest, saccate, bent downward.

TRIBE II. **SATUREIEÆ.** — Stamens 2 or 4, straight and spreading, or connivent under the upper lip; the upper pair shorter, or abortive. Anthers 2-celled. Nutlets smooth, distinct.

* Corolla-lobes nearly equal. Stamens distant.

3. MENTHA. Fertile stamens 4. Whorls spiked. Nutlets obtuse.
4. LYCOPUS. Fertile stamens 2. Whorls axillary. Nutlets truncate.

* * Corolla 2-lipped. Stamens straight, distant, spreading.

5. CUNILA. Stamens 2. Calyx equally 5-toothed, hairy in the throat.
6. PYCNANTHEMUM. Stamens 4. Calyx 2-lipped or 5-toothed, naked in the throat.
7. COLLINSONIA. Stamens 2 or 4. Calyx 2-lipped, the upper lip truncate, 3-toothed. Corolla fimbriate.

* * * Corolla 2-lipped. Stamens ascending and spreading above, or connivent under the upper lip.

+ Fertile stamens 2, the two sterile ones small.

8. HEDEOMA. Calyx 13-nerved, 2 lipped; the lower lip hispid.

+ + Fertile stamens 4. Calyx 13-nerved.

9. MICROMERIA. Calyx-teeth nearly equal. Flowers solitary. Low herbs.
10. CALAMINTHA. Calyx 2-lipped. Flowers in cymes. Anthers awnless. Chiefly shrubs.
11. DICERANDRA. Calyx 2-lipped. Anther-cells awned. Branching annuals.
12. MELISSA. Calyx tubular-bell-shaped, flattened on the upper side. Tube of the corolla curved upward.

TRIBE III. **MONARDEÆ.** — Stamens 2, ascending and parallel. Anthers 1-celled, or with 2 confluent cells. Calyx and corolla 2-lipped. Nutlets smooth, distinct.

13. SALVIA. Connective of the anther elongated, oblique; the upper cell fertile; the lower abortive or wanting.
14. MONARDA. Anther 2-celled, the cells confluent. Calyx-teeth equal.
15. BLEPHILIA. Anther 2-celled, the cells confluent. Calyx 2-lipped; the upper teeth awned.

TRIBE IV. **NEPETEÆ.** — Stamens 4, the upper pair longer. Nutlets smooth, distinct.

16. LOPHANTHUS. Upper stamens curving downward; the lower ascending. Anther-cells parallel.
17. NEPETA. Stamens all ascending. Anther-cells diverging.
18. CEDRONELLA. Stamens all ascending. Anther-cells parallel.

TRIBE V. **STACHYDEÆ.** — Stamens 4; the lower pair longer, parallel, ascending. Upper lip of the corolla concave or keeled. Calyx 3-10-toothed or lobed. Nutlets smooth, distinct.

* Calyx 2-lipped, closed in fruit.

19. BRUNELLA. Lips of the calyx toothed. Flowers 3 in a cluster, spiked.
20. SCUTELLARIA. Lips of the calyx entire; the upper one appendaged. Flowers single, opposite.

* * Calyx not 2-lipped; the teeth or lobes spineless.

21. MACBRIDEA. Calyx 3-lobed. Flowers capitate, in crowded 4-flowered whorls.
22. PHYSOSTEGIA. Calyx 5-toothed. Flowers opposite, spiked. Nutlets 3-angled.
23. LAMIUM. Calyx 5-toothed. Flowers in axillary cymes. Nutlets truncated.

* * * Calyx not 2-lipped; the teeth rigid or spiny.

24. MARRUBIUM. Calyx-teeth 10, nearly equal. Stamens included. Herbs woolly.
25. LEONOTIS. Calyx-teeth 8-10, very unequal. Stamens exserted. Whorls globose.
26. LEONURUS. Calyx-teeth 5. Nutlets obtuse, not truncate. Leaves incisely lobed.
27. STACHYS. Calyx-teeth 5. Nutlets truncate, sharp-angled. Leaves undivided.

TRIBE VI. **AJUGEÆ.** — Stamens 4, ascending, parallel, exserted. Nutlets reticulated and pitted, their bases partially united within.

* Stamens barely exserted, nearly equal.

28. ISANTHUS. Lobes of the corolla and calyx nearly equal. Peduncles 1-3-flowered.

* * Stamens long-exserted, didynamous.

29. TRICHOSTEMA. Lobes of the corolla nearly equal. Calyx 5-cleft. Flowers solitary.

30. TEUCRIUM. Lower lobe of the corolla longest. Calyx 5-toothed. Whorls crowded.

1. OCIMUM, L. Basil.

Calyx ovate or bell-shaped, 5-toothed, angled, deflexed in fruit; the upper tooth roundish, with the margins decurrent. Corolla nearly equally 2-lipped; the upper lip 4-cleft; the lower entire, flat. Stamens 4, didynamous; the lower pair longer, resting upon the lower lip of the corolla. Style 2-cleft at the apex. Glands of the disk 1 – 4. Nutlets smooth, ovoid or globular. — Chiefly tropical herbs or shrubs. Whorls 6-flowered, in a terminal bracted spike or raceme.

1. **O. Campechianum,** Miller. Stem branched, pubescent, especially at the joints; leaves ovate and ovate-lanceolate, acute, finely serrate, narrowed into a slender pubescent petiole, paler and pubescent on the veins beneath, dotted; raceme many-flowered, pubescent; bracts ovate; calyx hispid on the nerves, the lower teeth awned; corolla small, slightly exserted; stamens smooth. — South Florida. — Stem 6′ – 12′ high. Leaves 1′ – 2′ long. Flowers purple.

2. HYPTIS, Jacq.

Calyx tubular, with 5 equal subulate teeth. Corolla 5-lobed; the four upper lobes short, spreading or reflexed; the lowest longer, saccate, abruptly deflexed, thickened at the base. Stamens 4, didynamous, included in the bud in the lower lobe of the corolla. Nutlets smooth, ovoid.

1. **H. radiata,** Willd. Herbaceous; stem erect, mostly simple, pubescent above; leaves ovate-lanceolate, serrate or toothed, tapering into a petiole, smooth; heads peduncled, in the axils of the upper leaves, globose, surrounded by an involucre of several lanceolate whitish bracts, pubescent; corolla small, white, dotted with purple. — Low ground, Florida to North Carolina, and westward. July – Sept. — Stem 2° – 4° high.

3. MENTHA, L. Mint.

Calyx tubular, nearly equally 5-toothed. Corolla equally 4-lobed, the upper lobe notched or entire. Stamens 4, equal, distant, straight: anther-cells parallel. Style 2-cleft at the apex. Nutlets smooth, obtuse. — Pungent aromatic herbs. Whorls (in our species) approximate, forming a dense or interrupted terminal spike.

1. **M. viridis,** L. Stem and leaves smooth; leaves ovate-lanceolate, unequally serrate, nearly sessile; bracts leafy, and, like the calyx, smooth or hairy; spike cylindrical, interrupted below; calyx-teeth linear-subulate. (M. tenuis, *Michx.*) — Damp soils. Introduced, and sparingly naturalized. July – Sept. — Stem 1° – 2° high. Flowers pale blue.

2. **M. rotundifolia,** L. Soft-hairy; stem erect; leaves roundish, rugose, crenate, sessile, hoary beneath; spikes oblong, interrupted; bracts lanceolate;

fruiting calyx roundish, the teeth short and acute. — Near Wilmington, North Carolina. Introduced. — Stem 1° – 2° high. Corolla white.

3. **M. piperita,** L. Smooth; stem creeping at the base, ascending, branched; leaves ovate-oblong, acute, sharply serrate, rounded at the base, short-petioled; spikes slender, interrupted; bracts mostly longer than the whorls, the upper ones linear; calyx-teeth hairy. — Low ground. Introduced. July – Sept. — Stems 1° – 2° high. Flowers white or blue.

4. LYCOPUS, L.

Calyx bell-shaped, equally 4 – 5-toothed, naked at the throat. Corolla bell-shaped, exserted, equally 4-cleft. Fertile stamens 2, exserted; the upper pair sterile, included or wanting: anther-cells parallel. Style 2-cleft at the apex. Nutlets 3-angled, truncate at the apex, narrowed at the base. — Marsh or aquatic herbs, with long runners at the base. Leaves mostly toothed or pinnatifid. Whorls dense, axillary. Flowers small, sessile.

1. **L. Virginicus,** L. Stem smoothish; leaves ovate-lanceolate, toothed-serrate, acute or acuminate at each end, roughened above; calyx-teeth 4, ovate, obtuse; corolla small, exserted; sterile stamens minute. — Ponds and ditches, Florida? and northward. Sept. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Flowers white.

2. **L. sinuatus,** Ell. Stem smooth, much branched; leaves pinnatifid-toothed, ovate-oblong, tapering at each end; the upper ones narrower; calyx-teeth 5, lanceolate-subulate, acute; corolla twice as long as the calyx; sterile stamens minute or none. (L. exaltatus, *Pursh.*)

Var. **intermedius.** Closely pubescent or tomentose; stem simple or branched, very leafy; leaves ovate-lanceolate, acuminate at each end, coarsely serrate, pale beneath; whorls dense; calyx-teeth subulate, pubescent, nearly as long as the corolla; seeds pitted.

Var. **angustifolius,** Benth. (L. angustifolius, *Ell.*) Pubescent; stem simple or sparingly branched; leaves sessile, lanceolate or linear, toothed-serrate or entire, resinous-dotted; calyx-teeth subulate. — Ponds and ditches, Florida to Mississippi, and northward. Aug. – Oct. — Stem 2° – 4° high. Leaves 2′ – 4′ long. Flowers white.

5. CUNILA, L. Dittany.

Calyx tubular, 10-nerved, equally 5-toothed, hairy in the throat. Corolla 2-lipped; the upper lip notched or entire, the lower 3-cleft. Stamens 2, distant, exserted: anther-cells parallel. Style 2-cleft at the apex. Nutlets smooth. — Perennial herbs. Flowers small, in corymbose or crowded whorls.

1. **C. Mariana,** L. Smooth; stem slender, much branched; leaves ovate, serrate, acute, rounded or cordate at the base, subsessile; cymes loose, axillary and terminal, peduncled, mostly shorter than the leaves, corymbose; calyx-teeth lanceolate, acute. — Dry soil along the mountains, Georgia and northward. July – Sept. — Stem 1° high. Leaves 1′ long. Flowers purple.

6. PYCNANTHEMUM, Michx. Horse-mint.

Calyx tubular, 13-nerved, naked in the throat, equally 5-toothed, or slightly 2-lipped. Corolla 2-lipped; the upper lip notched or entire, the lower 3-cleft. Stamens 4, nearly equal, straight, spreading, commonly exserted: anther-cells parallel. Style 2-cleft at the apex. Nutlets smooth. — Perennial mostly pubescent or hoary herbs, with erect branching stems. Floral leaves often white-tomentose. Cymes mostly terminal, bracted. Corolla small, white or purplish. — Plants aromatic and pungent.

* *Calyx more or less 2-lipped, the subulate teeth often bearded with weak jointed hairs: cymes mostly terminal, widely spreading in fruit: bracts longer than the flowers: leaves pubescent, the uppermost whitened.*

1. **P. incanum,** Michx. Stem densely pubescent and hoary; leaves ovate or oblong-ovate, acute, sharply serrate, short-petioled, hoary-tomentose beneath; calyx-teeth subulate, and, like the bracts, commonly bearded with weak hairs. (P. Loomisii, *Nutt.*) — Var. Tullia. (P. Tullia, *Benth.*) Leaves smaller and smoother; cymes larger and more expanded; calyx-teeth longer. — Var. albescens. (P. albescens, *Gray.*) Leaves ovate-lanceolate, obtuse, smooth above, hoary beneath; calyx-teeth triangular lanceolate, obtuse, not bearded. — Dry woods and fence-rows, Florida to Mississippi, and northward. Aug. and Sept. — Stem 2° – 4° high. Leaves 1′ – 2′ long. Flowers white.

2. **P. dubium,** Gray. Stem villous-pubescent; leaves lanceolate, acute at each end, smooth or nearly so, entire; cymes hoary, dense-flowered, short-peduncled; calyx-teeth subulate, tipped, like the bracts, with a tuft of weak hairs; the 2 lower ones shorter. — Mountains of North Carolina. Aug. and Sept. — Stem 2° – 3° high. Leaves 2′ – 3′ long.

* * *Calyx-teeth nearly equal.*

+ *Calyx as long as the corolla; the teeth subulate and awn-pointed, like the rigid bracts: cymes dense-flowered.*

3. **P. aristatum,** Michx. Tomentose and hoary, or sometimes hairy; stem branched; leaves ovate or oblong, acute, sparingly serrate, rounded at the base, short-petioled, the uppermost somewhat whitened; cymes mostly terminal; ovary bearded. — Var. hyssopifolium, *Gray.* Stem simple or corymbose above; leaves rigid, linear-oblong, obtuse, entire. — Low ground, Florida to Mississippi, and northward. Aug. and Sept. — Stem 1½° – 3° high. Leaves 1′ – 2′ long.

+ + *Calyx-teeth beardless and awnless: cymes capitate, mostly terminal: bracts shorter than the flowers: leaves subsessile.*

4. **P. pilosum,** Nutt. Softly pubescent or villous; branches short, erect; leaves lanceolate, entire, acute at each end, none of them whitened; cymes small, compact, corymbose; calyx-teeth ovate-lanceolate, acute, and, like the bracts, hoary-tomentose, or, in var. leptodon, Gray, subulate and villous. — Upper districts of Georgia, and northward. Aug. and Sept. — Stem 2° high. Leaves 1′ – 2′ long.

5. **P. muticum,** Pers. Smooth or tomentose; stem corymbosely branched; leaves ovate or ovate-lanceolate, acute, serrate, rounded or slightly cordate at the base, sessile or short-petioled, the uppermost whitened; cymes small, compact, corymbose, minutely hoary-tomentose; calyx-teeth short, triangular-ovate, obtuse. — Dry soil, Florida to Mississippi, and northward. Aug. and Sept. — Stem 1° – 2° high. Leaves 1′ – 2′ long.

+– +– +– *Cymes capitate, in compact corymbose clusters: bracts shorter than the flowers: stem and rigid entire leaves smoothish.*

6. **P. lanceolatum,** Pursh. Stem branched; leaves lanceolate or linear-lanceolate, acute, rounded at the base; cymes numerous, pubescent; bracts ovate-lanceolate; calyx-teeth short, triangular. — Dry soil in the upper districts. Aug. and Sept. — Stem 2° high. Leaves 1′ – 2′ long.

7. **P. linifolium,** Pursh. Stem branched; leaves very numerous, linear, sessile; cymes smoothish; bracts linear, acute; calyx-teeth lanceolate-subulate, rigid, acute. — Dry soil, Florida to Mississippi, and northward. Aug. and Sept. — Stem 2° high.

8. **P. nudum,** Nutt. Smooth; stem simple or corymbose at the summit, straight; leaves sessile, ovate-oblong, obtuse, rounded at the base; cymes smooth; exterior bracts narrow-lanceolate, the inner short, subulate; calyx-teeth short, triangular-lanceolate, and, like the corolla, pubescent. — Low pine barrens, Dale County, Alabama, to the mountains of North Carolina. Aug. and Sept. — Stem 2° high. Leaves ½′ – 1′ long.

+– +– +– +– *Cymes axillary and terminal, large, dense-flowered: bracts ciliate.*

9. **P. montanum,** Michx. Stem slender, smooth, simple or branched; leaves smooth, ovate-lanceolate, serrate, acute, tapering into a short petiole, the lowest rounded at the base; cymes globose, the upper ones closely sessile; bracts numerous, ciliate; the exterior ovate, very acute, as long as the flowers, the inner ones linear; calyx-teeth short, acute; ovary bearded. — Mountains of North Carolina. July and Aug. — Stem 1° – 3° high. Leaves 2′ – 3′ long.

7. COLLINSONIA, L. Horse-Balm.

Calyx obovate, enlarged and deflexed in fruit, 2-lipped; the upper lip flattened, truncate, 3-toothed, the lower 2-cleft. Corolla funnel-shaped, 2-lipped, dilated at the throat; the four upper lobes equal, the lowest larger, declining, toothed or fimbriate. Stamens 2 or 4, long-exserted, spreading: anther-cells diverging. Nutlets smooth. — Strong-scented perennial herbs. Leaves large, coarsely serrate, dotted beneath. Flowers yellowish, solitary, opposite, in racemes or panicles. Petioles tumid at the base.

* *Fertile stamens* 2.

1. **C. Canadensis,** L. Nearly smooth; leaves ovate or oblong-ovate, acuminate, sharply serrate, acute, rounded or cordate at the base, long-petioled, the uppermost smaller, sessile; panicle elongated; bracts minute, very acute; flowering calyx very small, the upper lip much shorter than the lower, with

subulate teeth; corolla 4 times as long as the calyx, yellowish. — Rich shaded soil, Florida to Mississippi, and northward. Sept. — Stem 2° – 4° high. Leaves 4′ – 9′ long. Corolla 3″ – 5″ long.

2. **C. scabriuscula,** Ait. Stem smoothish; leaves petioled, ovate, acute, dentate, rounded at the base, smooth above, the uppermost sessile; bracts small, subulate-acuminate; panicle elongated, leafy at the base; calyx-teeth short, acute; stamens included or exserted. — Rich woods, Florida, *Pursh,* to South Carolina, *Elliott.* Sept. — Stem 3° high. Leaves 2′ 3′ long, on short petioles. Corolla half as large as in the preceding, the lowest lobe purple.

3. **C. punctata,** Ell. Stem pubescent; leaves ovate-lanceolate, acuminate, mucronate-serrate, pubescent and dotted beneath; panicle pubescent, leafy at the base; bracts ovate, acute or acuminate; calyx-teeth large, lanceolate, acute, nearly equal, $\frac{1}{2}$ – $\frac{1}{3}$ as long as the yellowish corolla; sterile stamens included, capitate. — Rich shady woods, Florida to North Carolina. Sept. — Stem 2° – 4° high. Leaves 4′ – 6′ long. Corolla 4″ – 6″ long, hairy within.

4. **C. ovalis,** Pursh. Stem slender, pubescent above; leaves ovate or round-ovate, acute, smooth, with few very coarse mucronate teeth, the lower ones barely longer than the very slender petiole, the upper sessile; racemes panicled; calyx pubescent, with unequal subulate teeth; bracts ovate, acuminate. — Mountains of North Carolina. — Stem 2° high. Leaves (excluding the petiole) 2′ long, $1\frac{1}{2}$′ wide.

* * *Fertile stamens* 4.

5. **C. verticillata,** Baldw. Stem simple, smooth below; leaves 4, membranaceous, elliptical, acute, rather finely serrate, acute or obtuse at the base, short-petioled, approximate, the lower surface, like the simple long-peduncled raceme, viscid-pubescent; lower flowers whorled, the upper opposite; bracts minute; calyx-teeth linear-subulate, half as long as the corolla. — Light shaded soil, Georgia, chiefly in the upper districts. Sept. — Stem 1° high. Corolla yellow or purplish.

6. **C. anisata,** Pursh. Viscid-pubescent; stem stout, simple or branched; leaves large, oval or ovate, acute, mucronate-crenate, mostly rounded or cordate at the base, the uppermost sessile; panicle many-flowered; bracts ovate; calyx-lobes large, ovate-lanceolate, nearly equal; corolla large, yellow. — Dry shaded soil, Georgia, Alabama, and Florida. Aug. and Sept. — Stem 1° – 2° high. Leaves 4′ – 8′ long. Corolla $\frac{1}{2}$′ – $\frac{3}{4}$′ long.

8. HEDEOMA, Pers.

Calyx tubular, somewhat gibbous under the base, equally 5-toothed or bilabiate, with the upper lip 3-toothed, the lower 2-cleft, hairy in the throat. Corolla 2-lipped; the upper lip notched or entire, the lower 3-cleft. Stamens 2, ascending: anther-cells diverging. Nutlets smooth. — Herbs, with small leaves, and axillary few-flowered cymes.

1. **H. pulegioides,** Pers. Annual, pubescent, much branched; leaves oblong-ovate, obtuse, sparingly serrate, pale beneath, contracted into a slender

petiole; whorls 6-flowered, shorter than the leaves; lower lip of the calyx hispid. — Dry hills in the upper districts. June – Sept. — Stem 1° high. Leaves 1′ long. Corolla small, pale blue.

9. MICROMERIA, Benth.

Calyx tubular, 13-nerved, nearly equally 5-toothed, mostly hairy in the throat. Corolla 2-lipped; the upper lip flat, notched or entire, the lower spreading, 3-lobed; the straight tube commonly shorter than the calyx. Stamens 4, didynamous, arching inward: anther-cells parallel, or at length diverging. Nutlets smooth. — Herbs, with the small white or purple flowers solitary, or few in a whorl, chiefly axillary.

1. **M. Brownei,** Benth. Smooth; stem prostrate or ascending, mostly simple; leaves round-ovate, obtuse, crenate or entire, short-petioled; flowers solitary, opposite, on widely spreading peduncles, exceeding the leaves, erect, purple. — River-banks, Florida. July and Aug. — Stem 6′ – 12′ long. Leaves 4″ – 6″ long.

10. CALAMINTHA, Benth.

Calyx tubular, 13-nerved, 2-lipped; the upper lip spreading, 3-toothed, the lower 2-cleft, bearded or naked in the throat. Corolla 2-lipped, open at the throat; the upper lip notched or entire, the lower 3-lobed, the tube commonly exserted. Stamens 4, didynamous, arching inward: anther-cells at length diverging. Nutlets smooth. — Herbs or shrubby plants, with white, scarlet, or purple flowers

§ 1. CALAMINTHA. *Herbs: cymes peduncled, compound, small-bracted; the upper ones forming a* 1*-sided compound raceme: flowers small.*

1. **C. Nepeta,** Link. Villous; stem much branched, ascending; leaves small, ovate, obtuse, serrate, petioled; cymes numerous, dichotomous, loose-flowered; calyx bearded in the throat, half as long as the purple corolla. — Waste places and road-sides, Georgia to North Carolina, introduced. July – Sept. — Stem 1° – 2° long. Leaves ½′ long.

§ 2. CALOMELISSA. *Shrubs: cymes nearly sessile, axillary, few-flowered, often leafy-bracted: pedicels elongated: throat of the calyx bearded: flowers showy.*

2. **C. Caroliniana,** Sweet. Stem much branched, closely pubescent; leaves rigid, smooth, oval or oblong, obtuse, crenate, finely dotted, narrowed into a slender petiole; axillary leaves small and clustered; cymes 6-flowered, the lower bracts leafy; corolla white or purple, spotted. — Sandy or rocky banks, Florida to North Carolina. Aug. and Sept. — Shrub 1° – 2° high, the flowering branches simple. Leaves 1′ – 1½′ long. Corolla 1′ long.

3. **C. coccinea,** Benth. Smooth or minutely pubescent; leaves obovate-oblong, obtuse, entire or obscurely crenate, tapering into a short petiole; flowers solitary, or in 3-flowered bracted cymes; corolla large, scarlet. — Sandy shores of St. Andrew's Bay, West Florida. Oct. and Nov. — Stem 2° high, the outer bark loose and shreddy. Leaves ½′ long. Corolla 1½′ long.

4. **C. dentata,** n. sp. Densely tomentose; stem diffusely branched; leaves small, obovate or wedge-shaped, rounded and 2 – 4-toothed at the apex, nearly sessile; flowers solitary or 3 together; calyx smooth, the upper lip emarginate or obscurely 3-toothed, much shorter than the lower; upper stamens abbreviated, sterile. — Sand ridges near Aspalaga, Florida. Sept. and Oct. — Stem 2° high. Leaves very numerous, $\frac{1}{2}'$ long.

5. **C. canescens,** Torr. & Gray. Hoary-tomentose; stem diffusely branched; leaves linear, entire, obtuse, with the margins revolute; cymes very numerous, 1 – 3-flowered; calyx smooth or hairy, the upper lip obtusely 3-toothed; corolla hairy, white or purple, dotted in the throat; anthers hairy. — Dry sands along the west coast of Florida, flowering throughout the year. — Stem 1° – 2° high. Leaves $\frac{1}{2}'$ – $\frac{3}{4}'$ long. Corolla $\frac{1}{2}'$ long.

11. DICERANDRA, Benth.

Calyx tubular, 13-nerved, 2-lipped; the upper lip entire or minutely 3-toothed, the lower scarcely longer, 2-cleft, the throat bearded. Corolla 2-lipped; the upper lip erect, the lower spreading, 3-cleft. Stamens 4, didynamous, spreading, exserted: anther-cells distinct, diverging, awned at the apex. Nutlets smooth. — Smooth annuals, with narrow leaves. Cymes loose, spreading, several-flowered, forming a leafy terminal raceme. Flowers purple.

1. **D. linearifolia,** Benth. Stem mostly branching, erect; leaves linear or lanceolate, serrate or entire, obtuse, sessile; cymes peduncled, 3 – 9-flowered; calyx purple, declined in fruit. (Ceranthera linearifolia, *Ell.*) — Dry sandy pine barrens, Florida, Georgia, and westward. Oct. and Nov. — Stem 1° high. Leaves 1′ long. Flowers very numerous, purple, dotted. Style hairy.

2. **D. densiflora,** Benth. Stem loosely branched; leaves oblong-lanceolate, or the uppermost linear; cymes sessile, 5 – 10-flowered. — East Florida, *Bentham.* — Cymes more compact, calyx smaller, and the awns of the anthers shorter, than in No. 1.

12. MELISSA, L. Balm.

Calyx tubular-bell-shaped, 13-nerved, 2-lipped; the upper lip flattish, 3-toothed, the lower 2-cleft, beardless in the throat. Corolla-tube recurved-ascending, 2-lipped; upper lip erect, the lower 3-cleft, spreading. Stamens 4, curved and connivent under the upper lip: anther-cells at length diverging. Nutlets smooth. — Herbs, with few-flowered 1-sided axillary cymes, and white or yellow flowers.

1. **M. officinalis,** L. Stem erect, branching; leaves ovate, crenate, truncate or cordate at the base; cymes 3 – 6-flowered, with ovate bracts. — North Carolina, and northward. Introduced.

13. SALVIA, L. Sage.

Calyx tubular or bell-shaped, 2-lipped; the upper lip entire or 3-toothed, the lower 2-cleft, beardless in the throat. Corolla 2-lipped; the upper lip entire or

notched, the lower spreading, 3-lobed, with the middle lobe larger, entire or notched. Stamens 2, short: anther-cells linear, widely separated by the elongated oblique connective; the upper one fertile, the lower imperfect or wanting. — Cymes in spikes, racemes, or panicles.

** Upper lip of the calyx entire: lower anther-cell wanting.*

1. **S. azurea,** Lam. Smooth; stem simple or branched; leaves lanceolate or linear, obtuse, entire, or the lower ones serrate, tapering at the base; racemes elongated; whorls nearly sessile, 6 – 12-flowered; calyx longer than the pedicel, the teeth ovate, acute; corolla 2 – 3 times as long as the calyx, white or blue; style bearded. — Dry light or sandy soil, Florida to South Carolina, and westward. July and Aug. — Stem 2° – 4° high. Leaves $1\frac{1}{2}'$ – 3′ long. Corolla 6″ – 8″ long.

2. **S. urticifolia,** L. Stem (1° – 2°) mostly simple, villous-pubescent and somewhat viscid; leaves thin, rhombic-ovate, acute, serrate, abruptly contracted into a winged petiole, the upper surface and veins beneath sparse-hairy; racemes terminal; bracts ovate, acuminate, caducous; whorls 6 – 12-flowered, remote; calyx bell-shaped, longer than the pedicel, broadly 3-toothed, about half as long as the blue and white corolla; style bearded.

Var. **major.** Leaves rigid, narrower, acuminate, crenate, with longer and broader-winged petioles; the lower surface, like the taller (4° – 6°) branching stem, hoary-tomentose; racemes axillary and terminal; flowers smaller. — Dry soil in the upper districts of Georgia, and northward: the variety in Middle Florida. July – Sept. — Leaves 2′ – 4′ long. Corolla 4″ – 5″ long.

3. **S. serotina,** L. Stem tomentose, branching; leaves ovate, mostly acute, crenate-serrate, tomentose, paler beneath, cordate or truncate at the base, petioled; racemes many-flowered; whorls mostly 6-flowered, the lower ones rather distant, the upper much crowded; calyx glandular, longer than the pedicel, acutely toothed, the upper lip purple; corolla small, twice as long as the calyx; style beardless; the lower lobe spatulate, acute, the upper short, subulate, reflexed. — South Florida. Nov. — Stem rigid, 1° high. Leaves 1′ long, twice as long as the petiole. Corolla blue and white, 3″ – 4″ long.

4. **S. Blodgettii,** n. sp. Stem much branched, shrubby at the base; branches erect, filiform, pubescent; leaves small, thin, oval or ovate, slightly crenate, rounded at the apex, acute at the base, about as long as the very slender petiole; racemes filiform, few-flowered; whorls distant, 2 – 6-flowered; calyx somewhat glandular, acutely toothed, slightly inflated in fruit; corolla very small; lower lobe of the style spatulate obtuse. — South Florida. — Stem 6′ – 12′ high. Leaves 6″ – 9″ long. Flowers blue, smaller than in No. 3.

*** Upper lip of the calyx broad, 3-toothed: lower anther-cell pollen-bearing, but sterile.*

5. **S. lyrata,** L. Hairy; stem erect, sparingly branched; leaves chiefly radical, spreading, lyrate-pinnatifid, mostly discolored; stem-leaves 2 or 4, smaller; the upper pair lanceolate and entire; raceme many-flowered; whorls 6-flowered, distant in fruit, longer than the ovate-lanceolate bracts; upper lip of the bell-shaped calyx truncate, with short erect teeth; corolla-tube elongated,

widening upward, the middle lobe of the lower lip dilated and notched. — Var. OBOVATA is less hairy, with the obovate leaves merely toothed or wavy on the margins. (S. obovata, *Ell.*) — Sandy soil, Florida to North Carolina, and westward. April and May. — Stem 1° high. Leaves 3′ – 6′ long, commonly purple beneath. Racemes in fruit 6′ – 12′ long. Corolla 9″ – 12″ long, blue, white-spotted in the throat.

6. **S. Claytoni,** Ell. Leaves cordate-ovate, sinuate, toothed, rugose; teeth of the upper lip of the calyx connivent. — Dry sandy pastures, around Beaufort, South Carolina, *Elliott.* North Carolina, *Curtis;* flowering through the summer. — Root thick, perennial. Stem 1° high. Leaves pubescent on the veins and margins. Bracts cordate-ovate, acuminate, toothed.

S. OFFICINALIS, L., is the common GARDEN SAGE.

S. COCCINEA, L., is common in gardens, and occasionally spontaneous around dwellings.

14. MONARDA, L. HORSE-MINT.

Calyx tubular, elongated, 15-nerved, nearly equally 5-toothed, bearded in the throat. Corolla nearly equally 2-lipped; the upper lip notched or entire, the lower 3-toothed. Stamens 2, ascending under the upper lip, and oftener exserted: anther-cells linear, diverging, confluent. Nutlets smooth. — Herbs. Leaves undivided. Whorls large, dense-flowered. Bracts colored.

** Upper lip of the corolla linear, acute.*

1. **M. didyma,** L. Stem smoothish; leaves ovate-lanceolate, acuminate, serrate, rounded at the base, petioled, smooth or hispid; whorls mostly solitary, terminal; calyx smooth, incurved; corolla large, bright red. — Mountains of North Carolina, and northward. Aug. and Sept. — Stem erect, 2° high. Leaves 2′ – 3′ long. Bracts lanceolate, red. Corolla 1′ long.

2. **M. fistulosa,** L. Stem branching, more or less pubescent, commonly hairy at the joints; leaves petioled, ovate-lanceolate, acute, sharply serrate, mostly rounded or truncate at the base; whorls terminal; calyx slightly incurved, hispid in the throat; corolla slender, rose-color. (M. Clinopodia, and M. mollis, *L.*) — Mountains of Georgia, and northward. Aug. and Sept. — Stem 2° – 5° high. Leaves smoothish, tomentose, or hispid, 1′ – 3′ long. Bracts pale purple.

** * Upper lip of the corolla broader, notched.*

3. **M. punctata,** L. Closely and finely pubescent; stem much branched; leaves lanceolate or oblong, acutish, slightly serrate, narrowed into a petiole, whorls lateral and terminal; bracts ovate or oblong, purple; corolla yellowish; the lower lip dotted with brown, the upper keeled; stamens not exserted. — Dry sandy soil, Florida to Mississippi, and northward. Aug. – Oct. — Stem 1° – 3° high. Leaves 1′ – 2′ long.

4. **M. gracilis,** Pursh. Very smooth; whorls lateral and terminal; exterior bracts linear, ciliate; corolla short; leaves linear-lanceolate, acuminate, serrate. — Mountains of Carolina, *Lyon.* — Stem obtuse-angled. Whorls small, naked. Calyx pubescent, ciliate. Corolla very slender, smooth, yellowish-white. (*)

15. BLEPHILIA, Raf.

Calyx ovate-tubular, 13-nerved, beardless in the throat, 2-lipped; the upper lip with three awned teeth, the lower 2-cleft, awnless or short-awned. Anthers 1-celled. Otherwise like Monarda. — Stem erect. Whorls several, lateral and terminal, the upper ones crowded.

1. **B. ciliata,** Raf. Stem hirsute; leaves nearly sessile, ovate-lanceolate, finely serrate, smoothish above, paler and tomentose beneath; whorls globose, crowded, or the lower ones distinct; bracts ovate-lanceolate, long-ciliate; calyx and corolla hairy. (Monarda ciliata, *L.*) — Dry soil, in the upper districts of Georgia, and northward. July and Aug. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Corolla ½′ long, blue.

2. **B. hirsuta,** Benth. Stem hirsute; leaves long-petioled, oblong-ovate, serrate, smooth or hirsute; whorls globose, distinct, or the upper ones crowded, the lower axillary; bracts linear-subulate, long-ciliate; corolla slightly pubescent. (Monarda hirsuta, *Pursh.*) — Damp woods on the mountains of North Carolina, and northward. July and Aug. — Stem 2° – 3° high, branching. Leaves thin, 3′ – 4′ long. Corolla pale blue.

16. LOPHANTHUS, Benth.

Calyx tubular, 15-nerved, slightly incurved, with the mouth oblique, and unequally 5-toothed. Corolla 2-lipped; the upper lip deeply notched, the lower spreading, 3-cleft, with the middle lobe crenate. Stamens 4, distant or spreading, the upper pair longer: anther-cells parallel. Nutlets smooth. — Erect perennial herbs. Whorls numerous, crowded in a cylindrical spike.

1. **L. scrophulariæfolius,** Benth. Stem pubescent; leaves petioled, ovate or ovate-lanceolate, acuminate, serrate, hairy beneath; spike interrupted at the base; calyx-teeth whitish, lanceolate, acute. — Mountains of Georgia, and northward. Aug. — Stem 3° – 4° high. Spikes 4′ – 15′ long. Bracts ovate. Corolla purplish.

2. **L. nepetoides,** Benth. Smooth; leaves petioled, ovate or oblong, acute, serrate; spike interrupted at the base; calyx-teeth green, ovate, barely acute. — Woods, North Carolina, and northward. Aug. — Stem 4° – 6° high. Bracts ovate. Corolla greenish-yellow.

17. NEPETA, L. Catnip.

Lower lip of the corolla 2-cleft or entire. Stamens ascending: anthers approximate by pairs, the cells diverging. Otherwise like Lophanthus. — Corolla blue or white.

1. **N. Cataria,** L. Erect, hoary-pubescent; leaves petiolate, cordate-ovate, acute, coarsely serrate; whorls many-flowered, the upper ones crowded in a thick dense raceme, the lower axillary; bracts as long as the pedicel; calyx-teeth lanceolate-subulate, the upper ones longer; corolla small, white. — Waste grounds, introduced. — Stem 2° – 3° high.

2. **N. Glechoma,** Benth. Stem prostrate or creeping, pubescent; leaves round-cordate, obtuse, serrate, petioled; whorls in nearly all the axils, few-flowered; corolla blue. — Low shady places, near dwellings. Introduced. — Stem 4′ – 12′ long. Leaves ½′ – 1′ long. Anthers forming a cross.

18. CEDRONELLA, Mœnch.

Calyx bell-shaped, nearly equally 5-toothed; the mouth oblique. Corolla dilated at the throat, 2-lipped; the upper lip straight, 2-cleft, the lower 3-cleft, with the middle lobe largest. Stamens 4, ascending, the upper pair longest: anther-cells parallel. Nutlets smooth. — Flowers in a terminal spike or raceme.

1. **C. cordata,** Benth. Stem low, pubescent, bearing long runners; leaves long-petioled, cordate, crenate, smoothish; the floral ones ovate; raceme few-flowered, 1-sided; cymes 1 – 3-flowered; calyx and pale-blue corolla large. (Dracocephalum cordatum, *Nutt.*) — Shady banks, on the mountains of North Carolina. May and June. — Stem ½° high, creeping at the base. Leaves 1′ long. Corolla 1½′ long. Plant pleasant-scented.

19. BRUNELLA, Tourn. Self-heal.

Calyx tubular-bell-shaped, 10-nerved, flat above, 2-lipped; upper lip broad, truncated, 3-toothed, the lower 2-cleft. Corolla-tube slightly inflated under the throat, 2-lipped; the upper lip roundish, arching, entire, the lower 3-lobed, with the middle lobe rounded, concave, crenate. Stamens 4, exserted, the smooth filament prolonged above the anther: anther-cells spreading. — Herbs, with 6-flowered densely-spiked whorls. Floral leaves orbicular, imbricated, persistent.

1. **B. vulgaris,** L. Pubescent or smoothish; stem erect, mostly simple; leaves ovate or oblong, serrate, petioled; spikes oblong or cylindrical; flowers purple. — Low grounds, Florida, and northward. Introduced. — Stem 6′ – 12′ high. Spikes thick, lateral and terminal.

20. SCUTELLARIA, L. Skullcap.

Calyx bell-shaped, 2-lipped, entire and closed after flowering; the upper lip furnished with a helmet-shaped appendage on the back, and falling away at maturity, the lower persistent. Corolla-tube recurved-ascending, dilated at the throat, 2-lipped; the upper lip arching, entire or notched, with the small lateral lobes united with its sides, the lowest lobe large and spreading. Stamens 4, ascending: anthers ciliate, approximate by pairs, those on the shorter filaments 1-celled, on the longer ones 2-celled, cordate. — Perennial mostly inodorous herbs. Flowers opposite, solitary, in the axils of the upper, mostly bract-like leaves, rarely in lateral racemes. Corolla blue or white.

** Flowers in terminal racemes.*

+ Leaves cordate, ovate or oblong, crenate, petioled; the floral ones shorter than the flowers, entire.

1. **S. versicolor,** Nutt. Softly pubescent; stem stout, branched above; leaves large, long-petioled, all broadly cordate, rugose and reticulate; the floral

ones ovate, sessile; racemes terminal and axillary, many-flowered, viscid; calyx hairy; lateral lobes of the corolla conspicuous. (S. cordifolia, *Muhl.*) — Dry open woods in the upper districts. July – Sept. — Stem 2° – 3° high. Leaves 2′ – 4′ long. Racemes 3′ – 6′ long. Corolla 6″ – 8″ long, blue and white.

Var. **minor.** Small (6′ – 12′); leaves tomentose, finely crenate; the lowest ones orbicular, the upper ovate-lanceolate, truncated at the base ($\frac{1}{2}$′ – 1′ long), the floral ones narrower. (S. saxatilis β ? pilosior, *Benth.* ?) — Dry woods, near Washington, Wilkes County, Georgia. August.

2. **S. arguta,** Buckley. Stem somewhat procumbent, pubescent; leaves ovate, cordate, coarsely crenate, on long pubescent petioles, nearly smooth; racemes axillary and terminal; flowers small. — Black Mountain, North Carolina, *Buckley.* July and Aug. — Stem 8′ – 12′ long. Leaves 1$\frac{1}{2}$′ – 2′ long, paler beneath, shorter than the petioles.

3. **S. canescens,** Nutt., var. ? **punctata.** Stem erect, tomentose, branched above; leaves ovate or oblong-ovate, acute, smoothish, paler and strongly veined beneath, resinous-dotted on both sides, short-petioled, the lower ones cordate, the upper and floral ones lanceolate, tapering at the base; racemes simple, axillary and terminal, pubescent, many-flowered; corolla blue and white. — Dry open woods, Florida and Georgia. July and Aug. — Stem 2° high. Leaves 1$\frac{1}{2}$′ – 2′ long, 2 – 3 times as long as the pubescent petioles. Corolla 8″ – 9″ long.

4. **S. serrata,** Andr. Smooth; stem erect, branched; leaves ovate, acute, smooth and green on both sides, decurrent into the margined petiole; the floral ones small, lanceolate; racemes short, simple, few-flowered, 1-sided; calyx mostly hairy; corolla large, blue. — Dry woods, North Carolina. — Stem 2° – 3° high. Leaves 1′ – 1$\frac{1}{2}$′ long. Corolla 1′ long.

5. **S. pilosa,** Michx. Hairy; stem simple or sparingly branched; leaves distant, ovate, obtuse, coarsely crenate; the lowest rounded at the base, the upper ones abruptly short-petioled, the floral ones spatulate, obtuse; racemes short, few-flowered; corolla pale blue. — Dry sandy soil, Florida to Mississippi, and northward. July and Aug. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Corolla 8″ – 9″ long.

6. **S. villosa,** Ell. Stem erect, branching, villous; leaves large, lanceolate, acute at each end, coarsely toothed, villous beneath, hispid above; racemes paniculate, with the flowers crowded. — Georgia, between the Ocmulgee and Flint Rivers, *Elliott.* May – July. — Stem 2° – 3° high. Leaves 3′ – 4$\frac{1}{2}$′ long, on petioles $\frac{1}{2}$′ long. (*)

+– +– *Upper and floral leaves alike, entire, nearly sessile; the lower broader, petioled, and mostly crenate.*

7. **S. integrifolia,** L. Pubescent throughout; stem mostly simple (6′ – 12′ high); leaves small ($\frac{1}{2}$′ – 1′ long), lanceolate, obtuse, entire, tapering downward, sessile; the lowest ovate or obovate, short-petioled, crenate or entire, the lower floral ones sometimes longer than the flowers; racemes leafy, few – many-flowered. — Dry sandy soil, Florida to North Carolina, and westward.

Var. **major.** Stem taller (1° – 2° high), branching; leaves larger (1′ – 2′ long); the upper oblong, entire, tapering into a petiole, the lower ovate or cor-

date, coarsely crenate, long-petioled, rounded at the apex. — Swamps, Florida, and northward. July and Aug. — Corolla 8″–10″ long, blue or white.

+ + + Leaves all linear and entire; the lowest bract-like.

8. **S. Floridana,** n. sp. Minutely pubescent; stem slender, branching; leaves linear, obtuse, entire, sessile, with revolute margins; the lowest minute and bract-like, the floral ones shorter than the flowers; racemes loose, few-flowered; corolla large, much dilated at the throat, the nearly equal lips broad and obtuse; filaments hairy at the base. — Pine-barren swamps near the coast, West Florida. July. — Stem 1° high. Leaves 1′ long, ½″–1″ wide. Corolla 1′ long, deep blue, the lower lip white in the middle.

** * Flowers small, in axillary racemes.*

9. **S. lateriflora,** L. Smooth; stem elongated, diffusely branched; leaves petioled, ovate-lanceolate, coarsely serrate, acuminate, the lower rounded at the base; racemes slender, 1-sided; corolla blue. — Shady swamps, Florida to Mississippi, and northward. July–Sept. — Stem 2°–3° high. Leaves membranaceous, 2′–3′ long. Corolla 2″ long.

** * * Flowers solitary, in the axils of the upper leaves.*

10. **S. galericulata,** L. Stem erect or ascending, simple or branched, smooth or pubescent; leaves short-petioled, ovate-lanceolate, acute, slightly crenate, rounded or subcordate at the base, paler and pubescent beneath; flowers nearly sessile, turned to one side. — Wet shaded places, North Carolina, and northward. July and Aug. — Stem 1°–2° high. Leaves 1′–1½′ long. Corolla 7″–8″ long, blue, the lower lip white in the middle, spotted with blue.

11. **S. parvula,** Michx. Stem low, pubescent; leaves ovate or roundish, obtuse, mostly entire, nearly sessile, strongly veined; flowers small, peduncled. — Rocky woods, West Florida to Mississippi, and northward. July and Aug. — Fibres of the root often bearing small tubers. Stem 6′–9′ high. Leaves 4″–6″ long. Corolla blue, 2″–3″ long.

21. MACBRIDEA, Ell.

Calyx tubular-bell-shaped, 3-lobed; the upper lobe lanceolate, entire, the two lower ones oblong, notched or entire. Corolla inflated, 2-lipped; the upper lip arching, concave, the lower broadly 3-lobed, spreading. Stamens 4, ascending under the upper lip. Filaments hairy: anthers approximate by pairs, the cells diverging, hairy within, denticulate on the margins. Nutlets smooth. — Erect mostly simple perennials. Whorls crowded in a dense cone-like terminal head. Corolla large, white or purple.

1. **M. pulchra,** Ell. Smooth or hairy; leaves lanceolate, acute, serrulate, dotted; the lower ones narrowed into a petiole, the upper sessile, the floral ones ovate, acute; whorls 4-flowered; calyx striate, the lobes entire; corolla purple, the tube striped with purple and white, the upper lip entire. — Pine-barren swamps, Georgia to North Carolina. Aug. and Sept. — Stem 1°–1½° high. Corolla 1½′ long.

2. **M. alba,** n. sp. Smooth or hirsute; leaves wedge-lanceolate or oblong, toothed, rounded at the apex narrowed to the sessile base; the lowest oblong, tapering into a slender petiole; the floral ones ovate or orbicular, obtuse; whorls 4-flowered; calyx nerveless, with the two larger lobes notched; corolla white, the upper lip emarginate. — Low pine barrens, West Florida, near the coast. July and Aug. — Stem 1° – 1½° high. Leaves 2′ long, or the radical ones 4′ – 5′ long, and, like the calyx and corolla, thick and somewhat fleshy.

22. PHYSOSTEGIA, Benth.

Calyx tubular-bell-shaped, inflated in fruit, nearly equally 5-toothed. Corolla tubular-funnel-shaped, 2-lipped; the upper lip erect, concave, entire or notched, the lower spreading, broadly 3-lobed. Stamens 4, ascending under the upper lip: anthers approximate, with the cells parallel, ciliate. Nutlets smooth, acutely 3-angled. — Smooth perennial herbs, with erect mostly simple stems, and opposite showy purplish flowers, in terminal spikes or racemes.

1. **P. Virginiana,** Benth. Leaves large (6′ – 9′ long), oblong, sharply serrate, the lowest narrowed into a petiole; spikes thick, dense-flowered; calyx-teeth acute; corolla 1′ long. (Dracocephalum Virginianum, *L.*) — Varies through several intermediate forms, including Dracocephalum variegatum, *Vent.*, and D. obovatum, *Ell.*, into var. DENTICULATA, with lanceolate or linear denticulate or entire leaves, and smaller (6″ – 9″ long) flowers in a long loosely flowered spike. — Low ground and swamps, Florida to Mississippi, and northward. June – Aug. — Stem 2° – 4° high. Racemes simple or compound.

23. LAMIUM, L. DEAD-NETTLE.

Calyx tubular-bell-shaped, 5-nerved, nearly equally 5-toothed, the teeth subulate, not spiny. Corolla slender, dilated at the throat, 2-lipped; the upper lip ovate or oblong, narrowed at the base; the lateral lobes small, at the margins of the throat; the lowest lobe large, notched, contracted at the base into a short stalk. Stamens 4, ascending under the upper lip: anther-cells at length spreading. Nutlets 3-angled, truncate at the apex. — Herbs. Leaves incised; the lower ones petioled, the floral ones sessile, longer than the dense whorls.

1. **L. amplexicaule,** L. Leaves orbicular, incisely crenate-lobed; the floral ones clasping, the others long-petioled; tube of the corolla straight, the lateral lobes truncate; anthers hairy. — Cultivated ground and waste places, common. May. ① — Stems 4′ – 12′ high. Corolla small, purple, often imperfectly developed.

24. MARRUBIUM, L. HOREHOUND.

Calyx tubular, 5 – 10-nerved, nearly equally 5 – 10-toothed; the teeth spiny, mostly spreading in fruit. Corolla-tube included in the calyx, 2-lipped; the upper lip erect; the lower 3-lobed, with the middle lobe largest. Stamens 4, included: anther-cells diverging. Lobes of the style short, obtuse. Nutlets obtuse at the apex. — Chiefly tomentose or woolly perennial herbs, with rugose leaves, and axillary whorls.

1. **M. vulgare,** L. Woolly; stems branching at the base, ascending; leaves petioled, ovate or roundish, crenate, the floral ones smaller, but longer than the capitate many-flowered whorls; calyx-teeth 10, recurved-spreading; corolla small, white. — Waste ground and road-sides. Introduced. — Stems 1°–2° high.

25. LEONOTIS, R. Brown.

Calyx tubular, 10-nerved, incurved, unequally 8–10-toothed; the teeth straight, spiny, the upper one largest. Corolla slender, 2-lipped; the upper lip long, arching, entire, the lower very short, 3-cleft, spreading. Stamens 4, ascending under the upper lip: anther-cells diverging. Nutlets 3-angled, truncate. — Tall herbs, with very large globose whorls in the axils of the upper leaves. Flowers yellow or scarlet.

1. **L. nepetæfolia,** R. Br. Annual; stem tomentose, simple or branched; leaves remote, long-petioled, broadly ovate, crenate, the floral ones lanceolate; whorls 1–several; calyx 8-toothed; corolla villous, scarlet. — Waste grounds, Georgia and Florida. June–Aug. Introduced. — Stem 1°–6° high. Whorls 1′–2′ in diameter. Corolla 1′ long.

26. LEONURUS, L. Motherwort.

Calyx top-shaped, 5-nerved, 5-toothed, the teeth spiny and at length spreading. Corolla 2-lipped; the upper lip entire, the lower spreading, 3-lobed, with the middle lobe obcordate. Stamens 4, ascending: anther-cells parallel, naked. Nutlets 3-angled, truncate. — Herbs, with incisely lobed leaves; the floral ones longer than the dense whorls. Bracts subulate.

1. **L. Cardiaca,** L. Stem (2°–4° high) square, pubescent; leaves long-petioled, the lower ones round-cordate, palmately lobed and toothed; the floral ones wedge-shaped, 3-cleft toward the apex; whorls distant, 6–15-flowered; corolla villous, purplish, spotted with brown in the throat. — Waste places. Introduced. June–July.

27. STACHYS, L. Hedge-Nettle.

Calyx tubular-bell-shaped, 5- or 10-nerved, 5-toothed; the teeth equal, or the upper one larger, more or less spiny (in our species), spreading in fruit. Corolla hairy within, 2-lipped; the upper lip erect, the lower spreading, 3-lobed, with the middle lobe much larger. Stamens 4, ascending: anthers 2-celled. Nutlets not truncate. — Chiefly hairy or hispid herbs, with few-flowered whorls in terminal racemes.

* *Perennial.*

1. **S. aspera,** Michx. Stem erect, with the angles rough with recurved bristly hairs, rarely smoothish; leaves short-petioled, ovate-oblong or ovate-lanceolate, acute, serrate, rounded at the base, smooth, or sprinkled with hairs above; the floral ones longer than the calyx; whorls 6–10-flowered, the lower ones distant; calyx-teeth spine-pointed. (S. hispida, *Pursh.* S. tenuifolia, *Willd.*)

— Swamps, South Carolina, and northward. June – Aug. — Stem $1\frac{1}{2}°$ – 2° high. Leaves 2′ – 3′ long. Corolla purple.

2. **S. hyssopifolia,** Michx. Smooth or nearly so; stem erect, slender; leaves sessile, lanceolate or linear, obtuse, entire or sparingly serrate; raceme short, of few 4 – 6-flowered whorls; calyx smooth, with spiny spreading teeth, $\frac{1}{3}$ – $\frac{1}{2}$ as long as the smooth violet corolla. — Wet pine barrens, in the middle districts of South Carolina, and northward. June – Aug. — Stem 1° – $1\frac{1}{2}°$ high. Leaves 1′ – 2′ long.

* * *Annual.*

3. **S. Floridana,** Shuttl. Smooth or hirsute; stem slender, erect; leaves lanceolate or oblong, petioled, or the upper ones sessile, acute or obtuse, serrate, truncate, or the lowest subcordate at the base; whorls few or numerous, distant, 6 – 10-flowered; calyx pubescent, with lanceolate-subulate rigid teeth; corolla twice as long as the calyx, purple. (S. annua, *Walt.* ?) — Low grounds, Middle and South Florida. July. — Stem 10′ – 15′ high. Leaves 1′ long, the lowest shorter than the petiole.

28. ISANTHUS, Michx.

Calyx bell-shaped, 10-nerved, 5-cleft. Corolla bell-shaped, equally 5-lobed. Stamens 4, incurved-ascending, exserted: anthers 2-celled. Nutlets obovoid, impressed-reticulated, laterally cohering at the base. — An annual pubescent and somewhat viscid branching herb, with lanceolate entire or sparingly toothed acute leaves, and small pale blue flowers, on 1 – 3-flowered axillary peduncles.

1. **I. cœruleus,** Michx. — Dry soil in the upper districts. July – Aug. — Stem terete, 1° – $1\frac{1}{2}°$ high. Leaves 1′ – $1\frac{1}{2}$′ long, 3-nerved below the middle.

29. TRICHOSTEMA, L. Blue-Curls.

Calyx short, reversed, oblique, 5-toothed; the 3 lower teeth long, connate; the 2 upper ones very short. Corolla slender, nearly equally 5-cleft. Stamens 4, long-exserted, partly coiled: anther-cells diverging. Nutlets pitted, united at the base. — Branching annuals, with entire leaves, and solitary blue flowers on lateral peduncles.

1. **T. dichotomum,** L. Pubescent and somewhat viscid, or nearly smooth; stem much branched, obscurely 4-angled; leaves oblong or lanceolate, obtuse, narrowed into a petiole. (T. lineare, *Nutt.* is a smoother form, with linear leaves.) — Dry sandy soil, Florida to Mississippi, and northward. Aug. and Sept. — Stem 1° – 2° high.

30. TEUCRIUM, L. Germander.

Calyx tubular or bell-shaped, 5-toothed. Corolla 5-lobed; the 4 upper lobes short, the lowest large, oblong or rounded, concave. Stamens 4, didynamous, the lowest pair longest, exserted between the 2 upper lobes of the corolla: anther-cells confluent. Nutlets rugose.

1. **T. Canadense,** L. Stem tomentose, erect, simple or branched; leaves short-petioled, ovate-lanceolate, acute, serrate, pubescent above, white-velvety beneath; flowers mostly alternate, in a long hoary spiked raceme, longer than the subulate bracts; calyx bell-shaped. (T. Virginicum, *L.*) — Swamps and low ground, Florida to Mississippi, and northward. July - Sept. ♃ — Stem 2° - 3° high. Leaves 2′ - 6′ long. Flowers purplish.

Order 95. BORRAGINACEÆ. (Borage Family.)

Herbs or shrubs, with terete or irregularly angled stems, and alternate entire exstipulate mostly rough-hairy leaves. Flowers usually in 1-sided spikes or racemes, which are coiled in the bud. — Calyx free, 5-cleft or 5-parted, valvate in the bud, persistent. Corolla regular (except No. 6), hypogynous, 5-lobed, imbricated or (in Myosotis) convolute in the bud. Stamens 5, equal, inserted on the tube of the corolla and alternate with its lobes. Ovary 4-celled, with a single ovule in each cell. Style single. Fruit various. Albumen scarce or none. Cotyledons flat or folded. Radicle superior.

Synopsis.

Tribe I. **CORDIEÆ.** Ovary undivided. Style terminal, twice 2-lobed at the apex. Fruit a 4-celled drupe. Cotyledons folded. Albumen none. — Shrubs. Flowers in heads or spikes.

1. CORDIA. Calyx opening regularly, not circumscissile.

Tribe II. **EHRETIEÆ.** Ovary undivided. Style terminal, 2-lobed at the apex. Fruit a 4-seeded berry. Cotyledons flat. Albumen scanty. — Shrubs.

2. EHRETIA. Style slender. Flowers corymbose.
3. TOURNEFORTIA. Style short. Flowers cymose or spiked.

Tribe III. **HELIOTROPEÆ.** Ovary undivided. Style terminal, simple. Fruit separating into 2 or 4 nutlets. — Chiefly herbs.

4. HELIOTROPIUM. Fruit separating into 4 nutlets, each 1-seeded.
5. HELIOPHYTUM. Fruit separating into 2 nutlets, each 2-seeded.

Tribe IV. **BORRAGEÆ.** Ovary deeply 4-parted, enclosing the base of the simple style. Fruit of 1 - 4 one-seeded nutlets. — Herbs.

* Throat of the corolla naked. Nutlets not hispid.

+ Corolla irregular.

6. ECHIUM. Corolla funnel-shaped, unequally lobed.

+ + Corolla regular.

7. ONOSMODIUM. Lobes of the corolla erect, acute. Nutlets smooth and stony.
8. LITHOSPERMUM. Lobes of the corolla rounded. Nutlets smooth or rugose.
9. MERTENSIA. Lobes of the corolla rounded. Nutlets somewhat fleshy.
10. MYOSOTIS. Lobes of the corolla convolute in the bud. Nutlets smooth.

* * Throat of the corolla closed with scales. Nutlets hispid.

11. CYNOGLOSSUM. Corolla funnel-shaped. Nutlets depressed.

1. CORDIA, Plum.

Calyx ovate or bell-shaped, 4 - 5-toothed, not circumscissile. Corolla funnel or salver form, 4 - 5-lobed. Stamens 4 - 5. Ovary entire, 4-celled. Style terminal, twice 2-cleft, mostly exserted. Drupe ovate or globose, pulpy, 1 - 4-seeded, commonly enclosed in the enlarged calyx. — Trees or shrubs. Leaves toothed or entire. Flowers spiked or capitate, white.

1. **C. bullata,** L. Rough throughout with white bristly hairs; leaves oblong-ovate, serrate-toothed, rugose, paler beneath, abruptly petioled; flowers capitate, on peduncles which are shorter than the leaves, and nearly terminal, but elongated and lateral in fruit; calyx ovoid, the subulate bristly teeth spreading; corolla short, hairy in the throat; stigmas club-shaped; drupe 1-seeded. — South Florida. — Leaves $\frac{1}{2}' - 1\frac{1}{2}'$ long. Heads $4'' - 5''$ in diameter.

2. EHRETIA, L.

Calyx tubular, 4 - 5-toothed. Corolla salver-form or wheel-shaped, 5-lobed. Stamens 5 : anthers ovate. Ovary entire, 4-celled. Style terminal, 2-cleft at the apex. Berry composed of 2 more or less separable 2-seeded nutlets. — Tropical shrubs. Leaves entire. Flowers corymbose, white.

1. **E. Beurreria,** L. Smooth; leaves petiolate, obovate or oblong-obovate, entire, mucronate, obtuse, or notched at the apex, paler beneath; corymb many-flowered, divaricate; calyx leathery, the teeth acute, pubescent on the margins; stigmas depressed; nutlets 4, apparently 2-celled, 1-seeded, finely furrowed on the back. — South Florida. — A small tree. Leaves $1\frac{1}{2}' - 3'$ long, acute at the base. Flowers white and fragrant.

2. **E. Radula,** Poir. Stem smooth; leaves obovate, entire, rounded or notched at the apex, tapering at the base into a short petiole, smooth beneath, very rough and at length white-spotted above; corymb few-flowered; pedicels minutely bracted and sparingly hispid; calyx 4 - 5-toothed; the teeth ovate, acute, pubescent on the margins; lobes of the corolla rounded, wavy; stigmas peltate, depressed in the centre; berry ovate, separable into 4 one-seeded nutlets. — South Florida. — Leaves $1' - 1\frac{1}{2}'$ long. Corolla $6''$ long.

3. TOURNEFORTIA, L.

Calyx 5-parted. Corolla salver-form or wheel-shaped, 5-lobed. Stamens 5, included. Style short, terminal; stigma conical. Berry composed of two 2-seeded nutlets, which are either united or separable, or by abortion 1 - 2-seeded. — Erect or twining shrubs, with entire leaves, and white or yellowish flowers, in 1-sided bractless often cymose spikes.

* *Fruit ovate, separable into two 2-seeded nutlets: corolla-lobes ovate, plicate.*

1. **T. gnaphalodes,** R. Br. White-silky throughout; stem thick, erect; leaves very numerous and imbricated, linear, obtuse, fleshy, tapering to the base; peduncles axillary; spikes 2 - 4-parted, dense, recurved; calyx-lobes oblong, obtuse; corolla fleshy; anthers ovate; berry deeply excavated at the base. —

Sea-shore, South Florida. — Shrub 2° – 4° high. Leaves 3′ long. Corolla small, white.

* * *Fruit globose, more or less lobed, composed of* 1 – 4 *nutlets, each* 1-*seeded: corolla-lobes narrow, acute.*

2. **T. volubilis,** L. Stem twining, and, like the lower surface of the leaves and spikes, tomentose; leaves ovate or oblong-ovate, petioled, roughish above, paler beneath; spikes lateral and terminal, very slender, cymose, short-peduncled, spreading; tube of the corolla contracted in the middle, the lobes linear-subulate; anthers connivent; berry small, 1 – 3-seeded. — South Florida. — Leaves 1′ – 1½′ long. Corolla 2″ long.

4. HELIOTROPIUM, Tourn.

Calyx 5-parted, persistent. Corolla salver-form, open at the throat, folded between the 5 lobes. Filaments and style very short. Stigma somewhat conical. Fruit separable into four 1-seeded nutlets. — Herbs or shrubby plants. Leaves rarely opposite. Spikes 1-sided. Flowers white or blue.

1. **H. Curassavicum,** L. Annual, smooth, fleshy; stems at length prostrate and diffuse; leaves alternate or opposite, lanceolate or linear, obtuse, narrowed at the base; spikes peduncled, simple or 2-parted, coiled in the bud; flowers small, sessile, white, bractless; nutlets smooth. — Saline marshes, Florida to North Carolina. June – Aug. — Stem 6′ – 18′ long. Leaves 1′ – 2′ long. — Plant dries black.

2. **H. myosotoides,** n. sp. Annual; stem erect, branched, rough with rigid white appressed hairs; the young branches hoary; leaves oblong or lanceolate, obtuse, hispid on both sides, narrowed to the base, the lower ones opposite; spikes filiform, elongated, 1-sided; flowers short-pedicelled, some of them leafy-bracted, others bractless; exterior calyx-lobes larger; corolla minute (½″ long), white; anthers hairy at the apex; nutlets united, hispid at the apex, with the sides concave. — South Florida. — Stem 4′ – 6′ high. Leaves ½′ long. Corolla slightly hispid.

5. HELIOPHYTUM, DC.

Throat of the corolla bearded, or closed by 5 inflexed folds. Fruit separating into two 2-celled nutlets. Otherwise like Heliotropium.

1. **H. Indicum,** DC. Annual; stem erect, rough-hairy; leaves oblong-ovate, often cordate, toothed or wavy on the margins, rugose, slightly roughish, decurrent into a long petiole; spikes hairy, coiled, at length elongated; corolla blue; nutlets spreading. — Waste places, Florida to North Carolina. June – Oct. — Stem 1° – 2° high. Leaves 2′ – 4′ long. Fruiting spike 6′ – 9′ long.

2. **H. parviflorum,** DC. Perennial, hirsute; stem erect, branching; leaves lanceolate or oblong, obtuse, entire, tapering into a slender petiole, the lower ones mostly opposite; spikes slender; corolla white, bearded in the throat; nutlets uneven, united. — South Florida. — Stem shrubby at the base, 6′ – 18′ high. Leaves membranaceous, 1′ – 2′ long. Corolla 1″ long. Spikes 2′ – 4′ long.

6. ECHIUM, Tourn.

Calyx 5-parted. Corolla funnel-form, unequally 5-lobed, naked at the throat. Stamens 5, unequal, mostly exserted. Style filiform. Nutlets 4, closed at the base, uneven or rough. — Herbs, with alternate leaves, and blue or purple flowers in spiked often panicled racemes.

1. **E. vulgare,** L. Hispid with bristly spreading hairs; stem simple, erect (1° – 2° high); leaves linear-lanceolate, sessile; flowers large, in short axillary racemose spikes; corolla purple, pubescent, twice as long as the lanceolate calyx-teeth, shorter than the stamens and style. — Fields, North Carolina. Introduced, June – Aug. ②

7. ONOSMODIUM, Michx.

Calyx 5-parted, the lobes linear and acute. Corolla ovate-tubular, naked in the throat, with five acute, connivent lobes. Anthers nearly sessile, sagittate, included. Ovary 4-parted. Style smooth, exserted. Nutlets 1 – 4, ovoid, shining. — Erect hispid herbs, with entire somewhat ribbed sessile leaves, and greenish flowers in a terminal bracted raceme or spike.

1. **O. Carolinianum,** DC. Rough with spreading white rigid hairs; stem stout, branched; leaves oblong-ovate; lobes of the corolla ovate, hairy; anthers oblong; calyx-lobes scarcely twice as long as the dull white nutlets. — Dry soil in the upper districts. June. ↳ — Stem 3° – 4° high. Leaves 2′ – 3′ long. Racemes leafy.

2. **O. Virginianum,** DC. Rough with appressed bristly hairs; stem slender, sparingly branched; leaves lanceolate or oblong-lanceolate, obtuse or acute; lobes of the corolla lanceolate-subulate, bristly; calyx-lobes 3 – 4 times as long as the white polished nutlets. (O. hispidum, *Michx.*) — Dry pine barrens, Florida, and northward. May and June. ↳ — Stem 1° – 2° high. Leaves 2′ long. Corolla twice as long as the calyx. Racemes leafy.

8. LITHOSPERMUM, L. Gromwell.

Calyx 5-parted, the lobes equal. Corolla funnel or salver form, obtusely 5-lobed, smooth, gibbous or hairy in the throat. Anthers oblong, nearly sessile, included. Stigma capitate, somewhat 2-lobed. Nutlets 1 – 4, ovate, stony, truncate at the base. — Chiefly rough-hairy herbs, with red roots, alternate entire leaves, and variously colored flowers in leafy-bracted racemes or spikes.

* *Annual: nutlets roughened.*

1. **L. arvense,** L. Rough with appressed hairs; stem nearly simple, or branched from the base; leaves lanceolate; the upper ones sessile and acute, the lower obtuse, tapering at the base; flowers scattered; corolla yellowish-white, about as long as the linear-subulate lobes of the calyx; nutlets 4. — Cultivated grounds and waste places, Florida, and northward. March and April. Introduced. — Stem 6′ – 18′ high. Leaves 1′ – 2′ long.

** * Perennials: nutlets smooth, white.*

2. **L. tuberosum,** Rugel. Hispid with scattered rigid hairs; stem erect, branching above; leaves somewhat 3-nerved; radical ones large (4′ – 6′ long), obovate-oblong, narrowed into a petiole, dotted with white above; the middle ones oblong, sessile; the floral ones (1′ long) elliptical; calyx-lobes linear, as long as the tube of the small yellowish-white corolla, and twice as long as the mostly solitary polished nutlet. — Rocky banks of the Apalachicola and Chipola Rivers, Florida. March and April. — Plant 6′ – 10′ high, increasing in fruit to 2° or more. Roots bearing oblong tubers.

3. **L. hirtum,** Lehm. Hispid with rigid glossy hairs; stem mostly simple, erect; leaves linear-lanceolate, obtuse, sessile; the lowest scale-like; the floral ones ovate-lanceolate; corolla large, yellow; the tube hairy at the base within, rather longer than the linear calyx-lobes; nutlets ovate, polished. (Batschia Gmelini, *Michx.*) — Dry pine barrens, Florida to South Carolina. April and May. — Stem 1° – 1½° high. Leaves 1′ – 2′ long. Corolla 6″ – 8″ long.

4. **L. canescens,** Lehm. Stem villous, erect, nearly simple; leaves lanceolate, sessile, obtuse, somewhat silky with appressed glossy hairs; the lowest small and scale-like; corolla large, yellow; the tube 2 – 3 times as long as the calyx. — Dry soil in the upper districts. April and May. — Stem 6′ – 12′ high. Corolla smaller than in the preceding.

9. MERTENSIA, Roth.

Calyx 5-parted. Corolla funnel-shaped, 5-lobed, naked, or with 5 folds in the throat. Stamens partly exserted. Style filiform. Nutlets somewhat fleshy, not flattened at the base. — Smooth or soft hairy perennial herbs, with entire leaves, and showy purplish-blue flowers in corymbed or panicled racemes, the upper ones bractless.

1. **M. Virginica,** DC. Smooth; stem erect, simple; leaves membranaceous, elliptical or obovate-oblong, the lower ones narrowed into a petiole; racemes corymbose; corolla large, naked and expanding at the throat, slightly lobed; the tube 4 times as long as the calyx, villous at the base within; filaments longer than the anthers. (Pulmonaria Virginica, *L.*) — River-banks and along mountain streams, South Carolina to Tennessee, and northward. May. — Stem 1° – 2° high. Leaves 2′ – 3′ or the lowest 4′ – 6′ long. Corolla 1′ long, sometimes white.

10. MYOSOTIS, L. Forget-me-not.

Calyx 5-cleft. Corolla salver-form, 5-lobed, convolute in the bud; the tube as long as the calyx, with 5 obtuse appendages in the throat. Stamens very short, included. Nutlets 4, elliptical, compressed, smooth, with a minute scar at the base. — Low hairy herbs, with entire alternate leaves, and small white or blue flowers in terminal bractless racemes

1. **M. laxa,** Lehm. Smooth, or slightly roughened with appressed scattered hairs; stem weak, slender, creeping at the base, branching; leaves lanceolate, obtuse, the lowest spatulate; racemes elongated in fruit; flowers distant, on widely spreading pedicels; calyx hispid with straight hairs, the teeth equal and obtuse; corolla pale blue. — Low grounds, Florida to Mississippi, and northward. May. ⓘ — Stem 1° high. Leaves 1′ – 1½′ long.

2. **M. verna,** Nutt. Hirsute with rigid spreading hairs; stem erect (4′ – 8′ high), branching above; leaves lanceolate, sessile; the lower ones spatulate, obtuse; calyx longer than the appressed pedicel, hispid, with the hairs near the base hooked; the teeth unequal, acute. — Var. MACROSPERMA is every way larger (1° – 1½° high); calyx with all the hairs hooked, the lower teeth twice as long as the upper ones. — Dry places in the upper districts, and northward; the variety, Florida, and westward. March and April. ⓘ — Corolla white or pale blue.

11. CYNOGLOSSUM, Tourn. HOUND'S-TONGUE.

Calyx 5-parted. Corolla funnel-form, with the throat closed with 5 obtuse scales. Stamens included. Nutlets 4, fixed near the apex to the base of the style, covered all over with barbed or hooked bristles. — Racemes with the lower flowers commonly bracted, the upper ones bractless.

1. **C. officinale,** L. Villous; stem leafy, branched above; leaves lanceolate or oblong, acute; the upper sessile, the lowest tapering into a long petiole; racemes hoary, nearly bractless; nutlets flattened anteriorly and slightly margined; corolla reddish-violet. — Waste grounds, North Carolina, and northward. Introduced. — Stem 1½° – 2° high.

2. **C. Virginicum,** L. Hispid; stem simple, stout, naked above; leaves oval or oblong; the lowest petioled, the upper auriculate and clasping; racemes single or corymbose, bractless; pedicels slender, recurved in fruit; nutlets rounded anteriorly; corolla pale blue. — Dry soil, Florida to Mississippi, and northward. May and June. — Stem 2° – 3° high. Lowest leaves 6′ – 9′ long. Nutlets 1 – 4.

3. **C. Morisoni,** DC. Hairy; stem erect, rather slender, widely branched; leaves lanceolate-oblong, acute; the lowest tapering into a petiole; racemes numerous, slender, villous, bracted; pedicels short, recurved in fruit; corolla small, about as long as the calyx, white or pale blue. (Myosotis Virginiana, *Pursh.*) — Dry woods in the upper districts of South Carolina and northward. June and July. — Stem 2° – 3° high.

ORDER 96. HYDROPHYLLACEÆ. (WATERLEAF FAMILY.)

Herbs, with alternate or (the lowest) opposite palmately or pinnately divided leaves, and regular flowers, either solitary in the axils, or in 1-sided recurved spikes or racemes. — Calyx 5-parted, persistent; the

lobes imbricated in the bud, and often with reflexed appendages in the sinuses. Corolla obtusely 5-lobed, convolute or imbricated in the bud. Stamens 5, inserted into the base of the corolla, and alternate with its lobes: anthers versatile. Ovary free, 1-celled, with 2 parietal placentæ, each bearing 2 or more amphitropous ovules. Style slender, 2-cleft. Capsule globose or oblong, loculicidally 2-valved. Seeds reticulated. Embryo small in the axis of hard albumen.

Synopsis.

* Lobes of the corolla convolute in the bud.

1. HYDROPHYLLUM. Calyx without appendages. Stamens exserted. Stems erect.
2. NEMOPHILA. Calyx appendaged at the sinuses. Stamens included. Stems prostrate.

* * Lobes of the corolla imbricated in the bud.

3. PHACELIA. Calyx without appendages. Capsule 4 – many-seeded.

1. HYDROPHYLLUM, L. Waterleaf.

Calyx 5-parted, the lobes subulate; without appendages. Corolla broadly tubular, 5-cleft, about as long as the calyx, with 5 linear appendages on the tube within, opposite the lobes. Stamens and style exserted: anthers linear. Ovary hispid. Placentæ 2, thick and fleshy, connected with the pericarp at the base and apex; each 2-ovuled. Style filiform, 2-cleft. Capsule globose, 2-valved, 1 – 4-seeded. — Erect perennial mostly hairy herbs, with long-petioled pinnately or palmately divided leaves, and white or blue flowers in peduncled cymes, without bracts.

1. **H. Virginicum,** L. Stem leafless below, sprinkled, like the leaves, with rigid hairs; leaves pinnately divided into 5 – 7 ovate cleft or toothed lobes, paler beneath; peduncles forking, longer than the petioles; cymes dense; calyx-lobes linear, hispid; filaments slightly hairy. — Low woods along the mountains, Georgia, and northward. June. — Stem 1° – 2° high.

2. **H. Canadense,** L. Smoothish; leaves orbicular-cordate, palmately 5 – 7-lobed, sharply toothed; cymes dense, on forking peduncles which are shorter than the petioles; calyx-lobes sparingly hispid; filaments densely bearded. — Mountains of North Carolina, Tennessee, and northward. June. — Stem 1° high. Leaves 3′ – 5′ in diameter. Corolla white.

2. NEMOPHILA, Nutt.

Calyx 5-parted, with reflexed appendages in the sinuses. Corolla tubular or short bell-shaped, with 10 scale-like appendages at the base of the filaments. Stamens included: anthers ovoid. Ovary hispid, 2 – 12-ovuled. Placentæ large, lining the walls of the pericarp. Style 2-parted. Capsule globose, 1 – 2-seeded. — Tender prostrate annual herbs, with divided leaves, and solitary long peduncled flowers opposite the leaves.

1. **N. microcalyx,** Fisch. & Meyer. Pubescent, or at length smoothish; stem filiform, diffuse; leaves thin, long-petioled, alternate, 3-lobed; the lobes

obovate or wedge-shaped, crenately toothed; the lowest ones mostly opposite, and 3–5-lobed; flowers minute, white, on slender spreading peduncles, which are shorter than the petioles; ovary 4-ovuled; capsule 1–2-seeded. — Shady woods, Florida, Georgia, and westward. April – June. — Stem 3′–1° long. Leaves ½′–1′ long. Corolla 1″ long. Seeds bony.

3. PHACELIA, Juss.

Calyx 5-parted, not appendaged in the sinuses. Corolla bell-shaped, 5-lobed, imbricated in the bud. Stamens included or exserted: anthers ovoid or oblong. Ovary 2–many-ovuled; the 2 narrow placentæ often projecting inwards, and forming an imperfect partition in fruit. Style 2-cleft. Capsule 2-valved, 4–many-seeded. — Low chiefly annual herbs, with alternate mostly pinnately divided leaves, and white or blue flowers in one-sided racemes.

§ 1. PHACELIA. — *Ovules and seeds* 4: *corolla variously appendaged within, the lobes entire.*

1. **P. bipinnatifida,** Michx. Hairy; stem erect, much branched; leaves long-petioled, 3–5-lobed, with the lobes oblong-ovate, acutely toothed; the lower ones short-stalked, the upper confluent; racemes loosely many-flowered, glandular; pedicels slender, recurved in fruit; calyx-lobes linear, hispid; stamens bearded below, equalling or longer than the corolla. — Shaded banks, Alabama to North Carolina. May and June. — Stem 6′–12′ high. Corolla blue, ½′ wide.

§ 2. COSMANTHUS. — *Ovules and seeds* 4: *corolla not appendaged within, the lobes fimbriate: filaments hairy below.*

2. **P. Purshii,** Buckley. Stems erect or ascending, clustered, smooth or hairy, branched; leaves hirsute; the lower ones petioled, almost pinnate, the upper clasping, pinnatifid, with the lobes acute; racemes many-flowered; calyx-lobes lanceolate-linear, bristly-ciliate; corolla blue. (P. fimbriata, *Pursh.*) — Shady banks, North Carolina, Tennessee, and northward. May and June. — Stem 8′–12′ high. Corolla ½′ wide.

3. **P. fimbriata,** Michx. Smoothish or slightly hairy; stems spreading or ascending; leaves few, the lowest petioled, with 3–5 roundish leaflets; the upper ones pinnately 5–7-lobed, with the lobes obtuse; racemes 3–10-flowered; calyx-lobes linear-oblong, obtuse; corolla white. — High mountains of North Carolina, *Michaux, Buckley.* May. — Stems 5′–8′ long.

§ 3. EUTOCA. — *Ovules more than* 4: *corolla usually with minute appendages within, the lobes entire.*

4. **P. parviflora,** Pursh. Pubescent; stems several, spreading, branching; leaves petioled; the lowest 3–7-lobed, the upper 3-parted; racemes loosely 5–15-flowered; pedicels slender, much longer than the calyx; calyx-lobes linear-oblong, bristly-ciliate; corolla small, pale-blue or white. — Shady banks, North Carolina, and northward. April and May. — Stems 3′–8′ high. Corolla 3″–4″ wide. Capsule few-seeded.

5. **P. pusilla,** Buckley. Pubescent and somewhat glaucous; stems ascending, branched; leaves sessile, pinnatifid, the segments obovate, abruptly

acuminate; pedicels short or elongated; sepals linear-oblong, acute, two thirds the length of the pale blue or white corolla; stamens exserted. — Prairies of Alabama, *Buckley*. April.

Order 97. HYDROLEACEÆ. (Hydrolea Family.)

Glandular-pubescent or bristly herbs, with entire alternate leaves. Flowers regular, axillary and solitary or clustered, or in terminal corymbs or coiled bracted spikes. — Calyx 5-parted. Corolla somewhat bell-shaped, 5-lobed, imbricated in the bud. Stamens 5, inserted on the tube of the corolla, and alternate with its lobes, the filaments oftener hairy. Styles 2, separate: stigmas capitate. Ovules numerous, anatropous. Capsule many-seeded, more or less 2-celled by the meeting of the 2 parietal placentæ, 2- or rarely 4-valved, opening through the middle of the cells, or at their margins. Embryo straight, in fleshy albumen.

1. HYDROLEA, L.

Calyx 5-parted. Corolla short, bell-shaped, 5-cleft; the lobes spreading. Stamens somewhat exserted, with the filaments dilated at the base: anthers sagittate. Styles 2 (rarely 3), separate. Capsule globose, 2-celled, or imperfectly 4-celled by the introversion of the placentæ, 2-valved. — Herbs, growing in water or muddy places, with entire leaves, often with spines in their axils, and blue axillary or corymbose flowers.

1 **H. corymbosa,** Ell. Spineless; stem erect, hirsute, and branching above; leaves ovate-lanceolate, sessile; the veins and margins slightly pubescent; flowers in a close terminal corymb; calyx-lobes lanceolate, acute, hispid, ⅓ as long as the corolla. — Pine-barren ponds, in St. Stephen's, South Carolina, *Elliott*. July and Aug. — Stem 2° high, creeping at the base. Leaves 1′ – 1½′ long. Corolla "azure, with yellowish veins and 5 white spots near the base." Capsule 2-valved.

2. **H. quadrivalvis,** Walt. Spiny; stem ascending from a creeping base, hispid, mostly simple; leaves lanceolate, acute, pubescent on the veins, tapering into a petiole; flowers axillary, the lower ones clustered, the upper solitary, short-peduncled; calyx-lobes linear, nearly as long as the corolla; stamens included; capsule almost 4-celled, by the introversion of the placentæ, 2-valved. — Pools and muddy banks of streams, Florida to North Carolina, and westward. July and Aug. — Stem 1° – 3° long. Leaves 3′ – 4′ long

2. NAMA, L.

Calyx 5-parted. Corolla tubular-funnel-shaped, 5-cleft. Stamens included, the filaments equal: anthers reniform. Ovules numerous, anatropous, pendulous. Styles 2, distinct. Capsule oblong, many-seeded, seemingly 2-celled by the meeting of the placentæ at the axis, 2- or at length 4-valved. Seeds pitted. —

Diffuse, hairy herbs, with alternate, entire leaves, and axillary and terminal single, clustered, or cymose purple or white flowers.

1. **N. Jamaicensis,** L. Pubescent; stems prostrate, diffusely branched, angled or slightly winged by the decurrent leaves; leaves spatulate-obovate, obtuse, tapering into a petiole; flowers solitary or 2 – 3 together, short-peduncled; calyx-lobes linear, ciliate, as long as the corolla; capsule oblong, splitting loculicidally into 2 valves, and at length septicidally into 4 valves, leaving the 2 placentæ free. — South Florida. — Stem 12′ – 18′ long. Leaves ½′ – 1′ long. Corolla small, purple, ciliate. Capsule 4-angled, smooth.

ORDER 98. POLEMONIACEÆ. (POLEMONIUM FAMILY.)

Chiefly herbs, with opposite or alternate leaves, and regular solitary or cymose flowers. — Calyx 5-cleft or 5-parted, with membranaceous-margined lobes, imbricated in the bud. Corolla 5-lobed, convolute or (in No. 4) imbricated in the bud. Stamens 5, inserted on the tube of the corolla. Ovary 3-celled, with 3 – many amphitropous ovules attached to the central placenta. Style 3-cleft. Capsule 3-celled, loculicidally 3-valved. Seeds angular. Embryo straight in the axis of copious albumen. Cotyledons leafy. Radicle inferior.

Synopsis.

TRIBE I. **POLEMONIEÆ.** — Lobes of the corolla convolute in the bud. Anther-cells parallel, opening lengthwise.

1. PHLOX. Corolla salver-form. Filaments unequally inserted on the tube. Leaves entire.
2. GILIA. Corolla tubular-funnel-shaped. Filaments equally inserted near the throat of the corolla. Leaves pinnately divided.
3. POLEMONIUM. Corolla short-bell-shaped. Filaments inserted on the throat of the corolla. Leaves pinnate.

TRIBE II. **DIAPENSIEÆ.** — Lobes of the corolla imbricated in the bud. Anther-cells opening transversely.

4. PYXIDANTHERA. Anther-cells awned at the base. Leaves entire. Flowers solitary.

1. PHLOX, L.

Calyx cylindrical or bell-shaped, 5-cleft. Corolla salver-form, with a long and slender tube, and obovate or roundish lobes. Stamens 5, included, unequally inserted on the tube. Style filiform. Ovules solitary in the cells. Capsule ovoid, 1 – 3-seeded; the valves at length separating from the central placenta. Seeds erect. — Mostly perennial herbs, with opposite or (the upper) alternate entire leaves, and showy purple or white flowers in terminal panicled cymes.

§ 1. *Stems herbaceous, erect or ascending.*

* *Style long, filiform: calyx-teeth lanceolate-subulate, not awn-pointed (except in No. 1): lobes of the corolla entire.*

1. **P. paniculata,** L. Smooth; stem tall, branched above; leaves ovate-lanceolate, acute or acuminate, the upper ones often cordate; cymes numerous,

close-flowered, forming a corymbose or pyramidal panicle; calyx-teeth long, bristle-pointed; lobes of the corolla round-obovate. (P. undulata, *Pursh.* P. cordata, *Ell.?*) — Var. ACUMINATA. (P. acuminata, *Pursh.*) Leaves acuminate at each end, the lower surface, like the stem, pubescent; calyx-lobes shorter. — Rich woods in the upper districts of Georgia, and northward. June and July. — Stem 2° – 4° high. Leaves 2′ – 4′ long, thin, strongly veined beneath, the primary veins uniting within the margins. Corolla purple or white.

2. **P. maculata,** L. Stem erect, pubescent and roughish, especially above, rarely branched, often spotted with purple; leaves rather rigid, lanceolate, acute; the lowest often linear and elongated, the upper broader and rounded at the base, rough on the margins; cymes closely many-flowered, lateral and terminal, forming an oblong or pyramidal panicle; calyx-lobes straight, acute; tube of the corolla slender, curved; the lobes obovate. (P. pyramidalis, *Smith.* P. suaveolens, *Ait.*) — Var. NITIDA. (P. nitida, *Ell.?*) Stem rigid, rough; leaves numerous, uniform, ovate-oblong, mostly cordate at the base; calyx-lobes acuminate. — Low woods, Florida to Mississippi, and northward. June and July. — Stem 2° – 3° high. Leaves 2′ – 4′ long. Corolla purple or occasionally white.

3. **P. Carolina,** L. Smooth; stem (1° high) erect or ascending, sparingly branched; leaves varying from ovate to lanceolate, acute or acuminate, the upper ones often rounded or slightly cordate at the base; panicle corymbose, few-flowered; calyx-lobes lanceolate, short-acuminate. (P. triflora, *Michx.?*) — North Carolina, *Bentham.*

4. **P. glaberrima,** L. Smooth; stem erect or ascending, sparingly branched above; leaves lanceolate or linear, acute, the lower tapering to the base, the upper broader and rounded at the base; cymes usually 3, terminal, few-flowered; calyx-lobes lanceolate, acute; corolla large, with the lobes wedge-obovate. — Mountains of North Carolina and Tennessee, and northward. July. — Stem 1° – 2° high. Leaves 3′ – 4′ long. Pedicels as long as the calyx. Corolla 1′ long, pale purple.

5. **P. reptans,** Michx. Pubescent or smoothish; stem low, slender, simple, bearing long runners at the base. Stem-leaves few, distant, lanceolate, rather obtuse; the radical ones and those on the runners larger, spatulate or obovate, petioled; cyme terminal, few-flowered; calyx-lobes linear-subulate, much shorter than the spreading or recurved pedicels; corolla-lobes obovate, shorter than the slender straight tube; anthers slightly exserted. — Damp shady woods near Washington, Wilkes Co., Georgia, and northward along the mountains. May and June. — Stem 6′ – 10′ high. Leaves 6″ – 8″ long, the radical ones 1′ – 3′ long. Corolla 1′ long, purple.

* * *Style short, scarcely longer than the ovary: calyx-teeth linear-subulate, tapering into an awn-like point: lobes of the corolla often notched: stems pubescent.*

6. **P. divaricata,** L. Softly pubescent and more or less glandular; stems ascending from a decumbent base, simple; leaves distant, lanceolate or ovate-lanceolate, rather acute, mostly rounded at the base; cymes corymbose, loosely-flowered; lobes of the corolla obovate, notched or entire, as long as the tube, and twice as long as the calyx. — Woods and banks, Florida to Mississippi, and

northward. April and May. — Stem 1° high. Leaves 1′ - 1½′ long. Corolla 6″ – 9″ long, pale bluish-purple.

7. **P. Walteri.** Softly pubescent or villous; stem low, ascending, simple; leaves linear-lanceolate, rather acute, sessile, erect; the lower ones approximate, the upper distant and often alternate; cymes terminal, compact, leafy-bracted; corolla-tube longer than the obovate lobes, and twice as long as the straight barely awned ciliate calyx-teeth. (P. pilosa, var. Walteri, *Gray*. P. pilosa, *Walt.*, *Ell.* P. glutinosa, *Buckl.* ?) Dry gravelly hills and pine barrens, Florida, and northward. April and May. — Stem 6′ – 12′ high. Leaves 1′ long. Corolla bright purple, sometimes white, the tube 6″ – 8″ long.

8. **P. pilosa,** L. Pubescent or villous; stem erect, mostly branching; leaves linear, or linear-lanceolate, spreading, distant, acute, the uppermost rounded at the base; cymes corymbose, loose-flowered; calyx-teeth ⅔ as long as the tube of the corolla, prolonged into long and spreading bristle-like points, hairy. (P. aristata, *Michx.*) — Dry woods, Florida, and northward. April and May. — Stem rather slender, 1° – 1½° high. Leaves 2′ – 4′ long. Corolla ½′ long, purple.

9. **P. Floridana,** Benth. Stem erect, simple, closely pubescent; leaves uniform, linear-lanceolate, acute, spreading or recurved, the upper ones often alternate; cymes crowded or corymbose; calyx-teeth spreading, somewhat bristle-pointed, glandular-pubescent, ⅓ – ½ as long as the tube of the large corolla. — Dry open woods, Middle Florida. May. — Stem 1½° – 2° high. Leaves 2′ – 3′ long. Corolla 1′ broad, pale purple, the lobes round-obovate and entire.

§ 2. *Stems shrubby, tufted, creeping: leaves subulate, rigid, leafy in the axils: style short.*

10. **P. subulata,** L. Pubescent; flowering stems erect; leaves very numerous, the upper ones linear and mostly alternate; calyx-teeth subulate, erect, spiny-pointed; lobes of the corolla notched or entire. (P. setacea, *L.* P. Hentzii, *Nutt.*) — Sandy pine barrens, Florida to Mississippi, and northward. April and May. — Stems 4′ – 12′ long. Leaves 4″ – 6″ long. Corolla ½′ – 1′ broad, purple or white.

P. Drummondii, *Hook.*, is an annual species, common in gardens.

2. GILIA, Ruiz and Pavon.

Calyx tubular or bell-shaped, 5-cleft. Corolla funnel-shaped, 5-lobed. Stamens inserted equally near the mouth of the corolla. Ovules commonly numerous in the cells. Capsule oblong or obovoid. Seeds angled or compressed. — Herbs, with finely divided leaves, and showy flowers.

1. **G. coronopifolia,** Pers. Stem tall, simple, pubescent or hairy, very leafy; leaves pinnately divided into many filiform very acute segments; flowers scarlet, crowded in a long compound raceme or narrow panicle; corolla tubular-funnel-shaped, with the oval-oblong obtuse lobes about ⅓ as long as the tube; stamens exserted. (Cantua Floridana, *Nutt.*?) — Dry sandy soil, Florida to South Carolina, and westward. July. ② — Stem 2° – 4° high. Corolla 1′ long, yellow and spotted with red within.

3. POLEMONIUM, L.

Calyx bell-shaped, 5-cleft. Corolla short-bell-shaped, 5-lobed. Stamens 5, declined, inserted equally on the throat of the corolla, with a hairy appendage at the base of the filaments. Ovules numerous in the cells. Capsule ovoid. Seeds angled. — Herbs, with alternate pinnately divided leaves, and blue or white flowers in a nearly bractless corymb.

1. **P. reptans,** L. Smooth; stem weak, diffusely branched; leaves petioled, pinnate, with 5 – 13 lanceolate or elliptical entire leaflets; corymbs peduncled, few-flowered; flowers nodding; calyx-lobes ovate, acute; corolla blue; anthers white. — Shady mountain woods, South Carolina, and northward. April and May. ♃ — Stem $\frac{1}{2}^{\circ}$ – 1° high. Leaflets $\frac{1}{2}'$ – $1\frac{1}{2}'$ long. Calyx enlarged in fruit.

4. PYXIDANTHERA, Michx.

Calyx 3-bracted, 5-sepalous. Corolla bell-shaped, 5-lobed; the lobes rounded, imbricated in the bud. Stamens broad, adnate to the tube of the corolla: anther-cells roundish, awned at the base, opening by a transverse line. Ovules 5 – 8 in each cell. Capsule few-seeded. — A small creeping shrub, with ascending very leafy branches. Leaves evergreen, linear, bearded at the base, the upper ones alternate. Flowers solitary, terminal. Sepals oblong, obtuse, ciliate. Corolla small, white.

1. **P. barbulata,** Michx. (Diapensia, *Ell.*) — Dry pine barrens, North Carolina, and northward. April and May. — Stems 3′ – 6′ long. Leaves 2″ – 3″ long.

ORDER 99. CONVOLVULACEÆ. (CONVOLVULUS FAMILY.)

Chiefly twining or prostrate herbs, with alternate exstipulate leaves, and regular mostly showy and fugaceous flowers. — Calyx 5-sepalous, imbricated. Corolla bell-shaped, funnel-shaped, or salver-form, 5-plaited or 5-lobed, convolute in the bud. Stamens 5, inserted on the tube of the corolla: anthers 2-celled, sagittate. Ovary free, single or double, 1 – 4-celled, with 1 – 2 erect anatropous ovules in each cell. Styles 1 or 2, entire or 2-cleft. Stigmas capitate, ovate, or acute. Capsule 2 – 6-seeded. Embryo large, coiled or curved in mucilaginous albumen.

Synopsis.

TRIBE I. **CONVOLVULEÆ.** — Ovary single. Embryo with leafy cotyledons. Capsule opening by valves. — Flowers axillary, single or cymose.

* Style single. Stigmas globose.

1. QUAMOCLIT. Capsule 4-celled, 4-seeded. Corolla (red) salver-shaped. Stamens exserted.
2. BATATAS. Capsule 4-celled, 4-seeded. Corolla bell-shaped. Stamens included.

3. PHARBITIS. Capsule 3-celled, the cells 2-seeded. Corolla bell-shaped.
4. IPOMŒA. Capsule 2-celled, the cells 2-seeded. Corolla bell- or funnel-shaped. Stamens mostly included.

* * Style single. Stigmas ovate or cylindrical.

5. JACQUEMONTIA. Capsule 2-celled, 4-seeded. Stigmas ovate, flattened.
6. CALYSTEGIA. Capsule imperfectly 2-celled, 4-seeded. Stigmas cylindrical. Calyx included in the membranaceous bracts.

* * * Styles 2, separate or partly united. Ovary 2-celled.

7. EVOLVULUS. Styles separate, 2-parted or 2-cleft.
8. STYLISMA. Styles separate or partly united, entire.

TRIBE II. **DICHONDREÆ.** — Ovary double. Embryo with cotyledons. Capsule utricular, 1-seeded. — Stems creeping.

9. DICHONDRA. Corolla bell-shaped. Stigmas thick. Peduncle 1-flowered.

TRIBE III. **CUSCUTEÆ.** — Ovary single. Embryo destitute of cotyledons. Capsule closed.

10. CUSCUTA. Twining parasites, with scale-like leaves. Styles 2.

1. QUAMOCLIT, Tourn. CYPRESS-VINE.

Sepals 5. Corolla salver-form, 5-plaited, with the tube elongated. Stamens inserted at the base of the tube, dilated at the base, exserted. Ovary 4-celled. Style single: stigma globular, 2-lobed. Capsule 4-valved, 4-seeded. — Twining annual herbs, with cordate entire or pinnatifid leaves, and red flowers, on axillary peduncles.

1. **Q. coccinea,** Mœnch. Leaves petioled, cordate, acuminate, angled at the base; peduncles as long as the petioles, 3 – 5-flowered; sepals awned; corolla slightly lobed, scarlet. (Ipomœa coccinea, *L.*) — Cultivated ground, in the middle and upper districts, and northward. July and Aug. — Corolla 1′ long, sometimes yellowish.

2. **Q. vulgaris,** Chois. Leaves pinnatifid, with long and linear segments; peduncles 1 – 3-flowered, the pedicels much thickened upward; sepals ovate or oblong, awnless. — Spontaneous near gardens. July – Oct.

2. BATATAS, Chois.

Sepals 5 Corolla bell-shaped, the limb 5-plaited, spreading. Stamens slightly dilated at the base, included. Ovary 4-celled. Style simple: stigma globular, 2-lobed. Capsule 4-celled, 4-seeded. — Trailing or twining herbs, with entire or lobed leaves. Peduncles axillary, 1 – several-flowered.

1. **B. littoralis,** Chois. Smooth and fleshy; stem prostrate, creeping; leaves oval or oblong, cordate, notched at the apex, entire or hastate-lobed, the lateral lobes entire or 2-cleft; peduncles as long as the petioles, 1-flowered; bracts subulate; sepals oblong, mucronate; corolla obscurely lobed, white, the tube yellowish. (Convolvulus obtusilobus, *Michx.*) — Drifting sands along the coast, Florida to South Carolina. May – Sept. ♃ — Leaves 1′ – 2′ long. Corolla 2′ long.

B. EDULIS, Chois., includes the different kinds of the cultivated SWEET POTATO.

3. PHARBITIS, Chois. Morning-Glory.

Sepals 5. Corolla bell-shaped or funnel-shaped, 5-plaited. Stamens dilated at the base, included. Style simple: stigma globose. Capsule 3 – 4-celled, 3 – 4-valved, 6 – 8-seeded. — Twining herbs, with petioled cordate entire or lobed leaves, and single or cymose blue or purple flowers, on axillary bracted peduncles.

1. **P. hispida,** Chois. Annual; stem glandular-roughened and hairy; leaves entire, round-cordate, acuminate; peduncles mostly longer than the leaves, 3 – 5-flowered; sepals ovate-lanceolate, acute, mostly hairy; corolla showy, blue, purple, or variegated. (Convolvulus purpureus, *L.*) — Around dwellings. Introduced. June – Sept.

2. **P. Nil,** Chois. Annual, hairy; leaves membranaceous, broadly cordate, 3-lobed, the lobes acuminate; peduncles shorter than the leaves, 2 – 3-flowered; sepals densely hispid, ending in a long subulate point; bracts linear; corolla purple. (Convolvulus Nil, *L.*) — Cultivated ground, Florida, and northward. July – Sept. — Corolla 1½′ long,

4. IPOMŒA, L. Morning-Glory.

Sepals 5. Corolla bell-shaped or funnel-shaped, 5-plaited. Stamens dilated at the base, included (except No. 8). Ovary 2-celled, rarely imperfectly 4-celled. Style simple: stigma capitate, 2-lobed. Capsule 2-celled, 2 – 4-valved, 4-seeded, or, by abortion, 1 – 3-seeded. Seeds smooth or hairy. — Twining or trailing rarely erect herbs, with cordate or sagittate entire or variously lobed leaves, and showy white or purple flowers on axillary peduncles.

* *Flowers crowded in a leafy-bracted capitate cyme: corolla small, bell-shaped.*

1. **I. tamnifolia,** L. Hairy; stem erect or twining; leaves cordate-ovate, acuminate, somewhat plicate with impressed parallel veins; peduncles longer than the petioles; lower bracts longer than the many-flowered heads; sepals subulate, bristly, nearly as long as the blue corolla; stigmas distinct; capsule depressed, somewhat 4-sided. — Cultivated ground, Florida to South Carolina, and westward. July – Oct. ① — Stem 1° – 4° long. Corolla ½′ long.

* * *Flowers solitary, or few in an open cyme.*

+ *Corolla bell-shaped: leaves orbicular: stems prostrate.*

2. **I. Pes-Capræ,** Sweet. Smooth and fleshy; stem prostrate; leaves petioled, orbicular, or slightly notched at the apex, parallel-veined; peduncles 1 – 3-flowered, the ovate bracts minute; sepals oval or oblong, obtuse, mucronate; tube of the corolla very short. (I. orbicularis, *Ell.*) — Drifting sands along the coast, Florida and Georgia. Aug. – Oct. ↳ — Leaves 2′ long. Corolla 2′ long, purple.

+ + *Corolla (mostly small) bell-shaped: capsule hairy: seeds smooth or nearly so: stems slender, twining: leaves petioled, cordate, entire or 3-lobed: stamens included.*

3. **I. commutata,** R. & S. Stem pubescent or hairy; leaves thin, cordate, acuminate, entire, angled or 3-lobed, the lateral lobes acute or sometimes

2-cleft, sprinkled with hairs on both sides; peduncles 4-angled, about as long as the filiform petioles, 1 – 5-flowered; bracts small, subulate; corolla purple, 4 – 5 times as long as the ovate-lanceolate acuminate ciliate sepals; capsule globose, 4-valved, shorter than the calyx. (I. trichocarpa, *Ell.*) — Margins of swamps, and cultivated grounds, Florida to North Carolina, and westward. Aug. – Oct. — Leaves 1′ – 1½′ long. Corolla 1½′ – 2′ long.

4. **I. triloba,** L.? Stem slender, hairy; leaves cordate, abruptly attenuated, but obtuse at the apex, entire or hastate-lobed, with the lateral lobes rounded, smooth below, slightly hairy above; peduncles 3-flowered, longer than the leaves; bracts subulate; corolla small, purple, twice as long as the oblong, acute, hairy sepals; capsule globose; seeds slightly pubescent on the angles. — South Florida. — Leaves 1′ - 1½′ long. Corolla ½′ long.

5. **I. lacunosa,** L. Stem and leaves smoothish; leaves cordate, obtuse or acuminate, entire or 3-lobed; peduncles 1 - 3-flowered, shorter than the leaves, often shorter than the petioles; corolla small, white, twice as long as the ovate-lanceolate acuminate ciliate sepals; capsule globose, slightly hairy. — Low grounds, in the middle districts of Georgia, and westward. Aug. – Oct. — Calyx and corolla commonly longer than the preceding.

+– +– +– *Corolla large, funnel-shaped, the tube elongated: capsule smooth: seeds often woolly: stems elongated: leaves cordate, petioled, entire or 3-lobed.*

6. **I. pandurata,** Meyer. Stem twining, smoothish; leaves cordate, acuminate, but scarcely acute, entire or fiddle-shaped, more or less pubescent above, paler and smooth beneath; peduncles commonly longer than the petioles, 1 – 6-flowered; bracts minute; sepals smooth, oblong-ovate, obtuse, mucronate, the two outer ones shorter; corolla white, with pointed lobes, the tube purple within. — Var. HASTATA. Stem mostly prostrate; leaves hastately 3-lobed, the lateral lobes rounded; peduncles mostly 1-flowered, longer than the leaves; inner sepals acute. — River-banks and margins of swamps, the var. in sandy pine barrens, Florida to Mississippi, and northward. Aug. – Oct. ♃ — Root tuberous, very large. Corolla 3′ long. Capsule globose. Seeds woolly on the angles.

7. **I. Michauxii,** Sweet. Stem pubescent, stout; leaves membranaceous, deltoid, cordate but decurrent on the petiole, obtuse, plaited by the strong impressed veins, wavy on the margins, slightly roughened above, hoary-pubescent beneath; peduncles 1 – 5-flowered; sepals thick, oblong, obtuse, tomentose; corolla pubescent, white tinged with purple, notched at the angles of the limb, and bright purple on the tube within; capsule ovate, pointed, 2-valved; seeds very silky. (I. macrorhiza, *Michx.*) — Light sandy soil, Florida to South Carolina, along the coast. July – Sept. ♃ — Root very large. Leaves 3′ – 5′ long, occasionally 3-lobed. Corolla 3′ – 4′ long, opening at night. Ovary imperfectly 4-celled.

8. **I. Bona-Nox,** L. Smooth; leaves membranaceous, cordate, acuminate, entire, long-petioled; peduncles very stout, 5 – 7-flowered, longer than the leaves; sepals ovate, obtuse; the 2 outer ones prolonged in a long filiform appendage; corolla white, almost salver-form; the tube very long and slender; stamens and style partly exserted; capsule ovate, pointed with the conical per-

sistent base of the style. (Calonyction speciosum, *Chois.*) — South Florida. — Stem sometimes prickly. Leaves 2′ – 3′ long. Tube of the corolla 3′ – 4′ long, 1″ – 2″ in diameter.

9. **I. sagittifolia,** Bot. Reg. Smooth and somewhat fleshy; stem slender; leaves sagittate, lanceolate or linear; the lateral lobes long, spreading, acute; peduncles 1 – 3-flowered, club-shaped, shorter than the leaves, minutely bracted; sepals oval, rounded and purple at the apex, shorter than the ovate 4-valved pointed capsule; seeds silky on the angles; corolla bright purple. (C. sagittifolius, *Michx.*) — Salt marshes, Florida to North Carolina. July – Sept. ♃ — Stem commonly 2° – 3° long. Corolla 3′ long.

10. **I. fastigiata,** Sweet? Smooth; leaves cordate, 3-lobed, with the lobes acuminate; peduncles about as long as the petioles, 3 – several-flowered, with leafy lanceolate bracts; sepals lanceolate, terminating in a long subulate point, on pedicels shorter than the bracts; tube of the corolla greenish, the expanding acutely lobed border purple. — South Florida. — Leaves 1½′ – 2′ long. Corolla 3′ long.

\+ \+ \+ \+ *Corolla bell-shaped: leaves pedately 7-parted.*

11. **I. sinuata,** Ort. Stem very long, shrubby at the base, the branches muricate, hairy; leaves smooth, with the divisions lanceolate, sinuate-toothed; peduncles shorter than the leaves, 1 – 2-flowered; pedicels flattened, dilated upward, nodding; sepals ovate-lanceolate, acutish, smooth, half as long as the corolla, widely spreading in fruit; corolla white, purple in the throat; capsule globose; seeds smooth. (Convolvulus dissectus, *Michx.*) — South Florida. July – Oct. ♃ — Stem sometimes 40° long. Leaves 4′ – 6′ wide. Corolla 1½′ long.

5. JACQUEMONTIA, Chois.

Sepals 5, unequal. Corolla bell-shaped, 5-plaited. Style single: stigmas 2, ovate or oblong, flattened. Ovary 2-celled, 4-ovuled. Capsule 2-celled, 2 – 4-valved, 4-seeded. — Habit of Ipomœa.

1. **J. violacea,** Chois. Stem smoothish, twining; leaves petioled, oblong-ovate or ovate-lanceolate, acuminate, pubescent, the lower ones slightly cordate; peduncles longer than the leaves, many-flowered; sepals ovate, acuminate, the 2 outer ones larger; corolla small, purple; stigmas oblong, diverging; capsule smooth, 4-valved, shorter than the calyx. — South Florida. — Stem 1° – 3° long. Leaves 1′ – 2′ long. Corolla ½′ long. Seeds roughish.

6. CALYSTEGIA, R. Brown.

Sepals 5, included in the two large membranaceous bracts. Corolla bell-shaped. Style single: stigmas 2, oblong or cylindrical. Capsule imperfectly 2-celled, 4-seeded. — Leaves petioled, cordate or sagittate. Peduncles 1-flowered.

1. **C. sepium,** R. Br. Smooth; stem twining; leaves broadly sagittate, acute, the wide lateral lobes obliquely truncated and often toothed; peduncles 4-angled, as long as the petioles; bracts cordate-ovate or oblong, strongly keeled

on the back; sepals acute; corolla white or rose-color. (Convolvulus sepium, *L.*) — Varies with the stem and shorter peduncles pubescent; leaves smaller and narrower. (C. Catesbeiana, *Ph.?*) — Rich soil, Florida (the var.), and northward. Aug. and Sept. ♃ — Leaves 2′ – 4′ long. Corolla 1½′ – 2′ long. Stigmas oblong-ovate. Stamens dilated and flattened below.

2. **C. spithamæa,** Pursh. Pubescent; stem erect, rarely twining at the summit; leaves ovate or oblong-ovate, cordate, the upper ones acute; peduncles longer than the leaves, terete; bracts ovate-lanceolate; corolla white. — Dry soil, Florida, and northward. May – Sept. ♃ — Stem 1° – 2° high. Leaves 1′ – 2′ long. Corolla 1½′ – 2′ long.

3. **C. paradoxa,** Pursh. Stem prostrate, tomentose; leaves oblong, cordate-sagittate, acute; peduncles longer than the leaf; bracts remote from the flower, linear; sepals naked, smooth, acuminate; corolla large, white. — In Carolina or Virginia, *Pursh.* (*)

7. EVOLVULUS, L.

Sepals 5. Corolla bell-shaped or somewhat wheel-shaped, mostly hairy. Stamens included. Styles 2, distinct, 2-cleft or 2-parted: stigma obtuse. Capsule 2-celled, 4-seeded. — Small perennial herbs, with chiefly silky or hairy prostrate stems, entire leaves, and small flowers on axillary peduncles. Capsules nodding.

* *Common peduncle very short or none; the pedicels shorter than the leaves.*

1. **E. sericeus,** Swartz. Silky with appressed hairs throughout, except the upper surface of the leaves; stem dividing at the base into numerous prostrate or ascending simple filiform branches; leaves sessile, linear or linear-lanceolate, acute at each end, erect; peduncle almost wanting, 1-flowered, rarely 2″ – 3″ long and 2 – 3-flowered; sepals ovate-lanceolate, acuminate, ½ as long as the white wheel-shaped corolla. — Varies with shorter (4′ – 6′ long) and more rigid stems, and oblong or elliptical and obtuse leaves. — Damp soil, Florida, Georgia, and westward. June – Oct. — Stems 6′ – 12′ long. Leaves 6″ – 9″ long. Corolla 4″ – 5″ in diameter.

* * *Peduncles longer than the leaves.*

2. **E. glabriusculus,** Chois. Stem creeping, simple, sprinkled with appressed hairs; leaves rigid, elliptical-obovate, mucronate, nearly sessile, smooth above, pubescent on the veins beneath; peduncles bristle-like, rather longer than the leaves, 1 – 3-flowered; sepals ovate-lanceolate, acute, hairy, as long as the pedicel; corolla very small. — South Florida. — Stem 1° long. Leaves 4″ – 6″ long. Corolla 2″ wide.

3. **E. diffusus,** n. sp. Silky with long spreading hairs; stems very numerous, filiform, diffuse; leaves obovate or oblong, mucronate, short-petioled; peduncles bristle-like, often by pairs, 3 – 4 times as long as the leaves, 1 – 3-flowered; sepals ovate-lanceolate, acuminate, shorter than the pedicels; corolla wheel-shaped; styles parted nearly to the base. — South Florida. — Stems 1° – 2° long. Leaves 4″ – 6″ long. Corolla 2″ wide.

8. STYLISMA, Raf.

Sepals 5. Corolla bell-shaped, hairy. Stamens included. Styles 2, distinct or united below, entire: stigmas peltate. Ovary 2-celled, 4-ovuled. Capsule 1–4-seeded. — Perennial prostrate pubescent herbs, with entire leaves, and small flowers on axillary peduncles which are longer than the leaves.

1. **S. humistrata.** Hairy and roughish; leaves petioled, oblong, slightly cordate, obtuse or emarginate at the apex, mucronate; peduncles filiform, 1–7-flowered; sepals ovate, acute, smooth, fringed on the margins; capsule smooth, nodding; bracts minute; corolla white; filaments hairy; styles united below. — Varies with linear or lanceolate, often acute, nearly sessile leaves, shorter and uniformly 1-flowered peduncles, and more pubescent sepals. (Convolvulus humistratus, *Walt.* C. tenellus, *Ell.*) — Dry sandy pine barrens, Florida to South Carolina, and westward. July – Sept. — Stems 2°–3° long. Leaves 1′–3′ long. Corolla 10″ long. Capsule ovate, commonly 1-seeded, crowned with a tuft of hairs when young.

2. **S. aquatica.** Silky-pubescent and somewhat hoary; leaves linear-oblong, obtuse, mucronate, truncate or slightly cordate at the base, short-petioled; peduncles 1–7 (mostly 3-)-flowered; sepals ovate-lanceolate, acuminate, very silky; capsule erect, pubescent; bracts subulate, as long as the pedicels; corolla purple; filaments smooth; styles distinct. (Convolvulus aquaticus, *Walt.*) — Margins of ponds, Florida to North Carolina, and westward. July – Sept. — Stems 2°–3° long. Leaves ½′–1′ long. Corolla 5″ long.

3. **S. Pickeringii,** Gray. Soft-pubescent or villous; leaves linear, obtuse, narrowed at the nearly sessile base; peduncles 1–3-flowered; bracts linear, as long as the flower; sepals ovate-lanceolate, very hairy, longer than the pedicel; corolla small, white; styles united nearly to the apex; stamens slightly exserted. — Sandy pine barrens, North Carolina, and northward. July – Sept. — Stems 2°–3° long. Leaves 12″–15″ long. Corolla 5″ long.

9. DICHONDRA, Forst.

Calyx 5-parted, with the lobes obovate. Corolla somewhat wheel-shaped, 5-parted, shorter than the calyx. Stamens included. Ovaries 2, distinct, 2-ovuled. Styles 2: stigmas capitate. Utricles 2, one-seeded. — Low pubescent creeping herbs, with broadly cordate petioled leaves, and solitary bractless flowers on axillary peduncles.

1. **D. repens,** Forst., var. **Carolinensis,** Chois. — Low grounds, Florida to North Carolina, and westward. March – Oct. ♃ — Stems filiform, 6′–12′ long. Leaves ½′–1½′ in diameter, on petioles 1′–4′ long. Peduncles shorter than the petioles. Calyx silky. Corolla minute, greenish white.

10. CUSCUTA, Tourn. DODDER.

Calyx 4–5-cleft, or 4–5-sepalous. Corolla globular-urn-shaped, bell-shaped, or somewhat tubular, 4–5-cleft. Stamens 4–5, with fimbriate mostly confluent scales at the base. Ovary 2-celled, 4-ovuled. Styles 2: stigmas capitate (in

our species). Capsule 4-seeded. Embryo filiform, coiled around fleshy albumen. Cotyledons none. — Twining parasites, germinating in the ground, but early decaying at the root. Stems filiform, yellow or reddish, without leaves, or with minute scales in their place. Flowers white, small, variously clustered.

* *Flowers pedicelled, with few and distant bracts: calyx 4 – 5-cleft: corolla bell-shaped, persistent at the base of the capsule.*

1. **C. arvensis,** Beyrich. Low; flowers small, 5-parted, in loose umbel-like cymes; lobes of the corolla lanceolate, acuminate, spreading or reflexed, longer than the tube; scales ovate, often partly exserted; capsule globose, thin, yellowish. — Fields and sterile soil, on small herbs, Florida to North Carolina. June and July. — Stems 1° high. Flowers the smallest of our species.

2. **C. Gronovii,** Willd. Stem climbing high; flowers mostly 5-cleft, in loose paniculate cymes; lobes of the corolla ovate, obtuse, spreading, mostly shorter than the tube; scales large, confluent at the base; capsule globose, brown. (C. Americana, *Pursh., DC.*) — Low shady places, on coarse herbs, Florida, and northward. Aug. – Oct.

3. **C. neuropetala,** Engelm. Stem branching; flowers rather large, 5-parted, in smooth umbel-like cymes; lobes of the calyx ovate-lanceolate, acute; lobes of the corolla ovate, acuminate, crenulate, 1-nerved, spreading, as long as the tube; scales ovate, incurved, as long as the tube. — Damp soil, Florida, and westward. May.

4. **C. rostrata,** Shuttl. Stem twining high; flowers large, 5-parted, in umbel-like cymes; lobes of the calyx ovate, obtuse; lobes of the corolla ovate, obtuse, spreading and at length reflexed, half as long as the tube; scales connate at the base; capsule large, acute. — Shaded moist places on tall herbs, on the mountains of North Carolina, and northward.

* * *Flowers sessile, in compact clusters: calyx of 5 separate sepals, surrounded by several similar bracts: corolla persistent at the apex of the capsule.*

5. **C. compacta,** Juss. Stems climbing high; bracts and sepals orbicular, concave, denticulate, imbricated; tube of the corolla equalling or longer than the calyx, the oblong obtuse lobes spreading; scales confluent at the base; capsule globose-ovate. — Damp shady places, Florida, and northward. July – Oct. — Clusters often continuous, and spirally coiled around herbs and shrubs.

Order 100. SOLANACEÆ. (Nightshade Family.)

Herbs or shrubs, with colorless juice, alternate leaves, and regular axillary or supra-axillary flowers. — Calyx 4 – 7-cleft, or 4 – 7-toothed, persistent, often inflated in fruit. Corolla 5 – 10-lobed, plaited and valvate, convolute, or imbricated in the bud. Stamens 4 – 7, inserted on the tube of the corolla: anthers 2-celled, opening lengthwise or by terminal pores. Style and stigma single. Fruit a 2-celled (rarely 3 – 5-celled) many-

seeded capsule or berry. Placentæ adnate to the partition and projecting into the cells. Seeds campylotropous or amphitropous. Embryo mostly slender and curved in fleshy albumen. — Chiefly narcotic poisons.

Synopsis.

§ 1. Fruit a berry.

* Corolla wheel-shaped or short bell-shaped.

+ Anthers connivent. Calyx unchanged in fruit.

1. SOLANUM. Anthers opening by terminal pores. Berry juicy.
2. CAPSICUM. Anthers opening lengthwise. Berry juiceless.

+ + Anthers separate, opening lengthwise. Fruiting calyx inflated.

3. PHYSALIS. Berry juicy. Calyx entire at the base.
4. NICANDRA. Berry dry. Calyx 10-toothed at the base.

* * Corolla funnel-shaped.

5. LYCIUM. Anthers opening lengthwise. Berry juicy. Shrubs.

§ 2. Fruit a capsule.

6. DATURA. Calyx prismatic or terete, circumscissile. Capsule spiny.

1. SOLANUM, L. NIGHTSHADE.

Calyx 5-toothed or 5-cleft. Corolla wheel-shaped, 5-lobed, valvate, with the margins turned inward. Stamens 5, inserted on the throat of the corolla, exserted; the filaments very short: anthers opening by 2 terminal pores, connivent. Stigma obtuse. Berry juicy, 2-celled, many-seeded. — Herbs or shrubs, often armed with prickles. Leaves alternate or in pairs. Flowers opposite the axils, or above them.

* *Unarmed: cymes or racemes corymbed: corolla 5-parted.*

1. **S. nigrum,** L. Herbaceous, mostly pubescent with simple hairs; stem erect, branching; the branchlets wing-angled, and more or less toothed; leaves petioled, oblong-ovate, toothed or entire; flowers somewhat umbelled, drooping, small, white; berry black. — Damp soil, Florida to Mississippi, and northward. July – Sept. — Stem 1° – 3° high, diffuse. Leaves 2′ – 4′ long, when in pairs, unequal. Corolla 4″ – 6″ wide. Berry 2″ – 3″ in diameter.

2. **S. Radula,** Vahl. Shrubby, and very rough throughout with short rigid rusty stellate hairs; leaves oblong, entire, acute, tapering into a short petiole; cymes slender, long-peduncled, once or twice forking, many-flowered, longer than the leaves; flowers small, linear in the bud; corolla white, deeply parted, the lobes linear-lanceolate, obtuse; anthers hairy. — South Florida. — Leaves 2′ – 3′ long. Cymes 3′ – 4′ long. Corolla 5″ wide.

3. **S. verbascifolium,** L. Shrubby, and hoary throughout with dense soft stellate hairs; leaves large, ovate-oblong, acute at each end, entire; cymes on long and very stout peduncles, forking, compactly many-flowered; flowers globose-obovate in the bud; calyx-lobes ovate, acute; corolla-lobes oblong, obtuse, anthers oblong, twice as long as the slender filaments; ovary woolly. — South Florida. Oct. – Dec. — Shrub 4° – 5° high. Leaves 6′ – 9′ long. Corolla $\frac{1}{2}$′ wide.

4. **S. Blodgettii,** n. sp. Stem shrubby? smooth, the branches, like the upper surface of the leaves, roughened with a close stellate (greenish) pubescence; leaves oblong, obtuse, entire, narrowed into a short petiole, hoary-tomentose beneath, like the rather short-peduncled many-flowered forking cymes; calyx small, obconical, with short rounded teeth; corolla purple? deeply parted, 3 – 4 times as long as the calyx, with lanceolate acute lobes; anthers nearly sessile, linear, narrowed at the apex, shorter than the style. — South Florida. — Leaves 3′ – 4′ long. Flowers ½′ in diameter.

* * *Prickly: flowers racemed: corolla mostly angularly lobed.*

5. **S. Carolinense,** L. Hirsute with stellate hairs; stems erect; leaves ovate-oblong, angularly lobed or toothed, abruptly contracted into a short petiole; the veins and petiole, like the stem, armed with straight yellow prickles; racemes simple, slender, 3 – several-flowered; calyx-lobes acuminate. — Var. FLORIDANA (S. Floridana, *Dunal*) is less hairy; stems ascending from a creeping base; leaves narrower, sinuate-lobed or toothed, with more numerous and stronger prickles. — Dry waste places, Florida to North Carolina. June – Sept. ♃ — Stem 1° – 1½° high. Leaves 3′ – 5′ long. Corolla 9″ – 12″ wide, blue or white.

6. **S. aculeatissimum,** Jacq. Plant beset throughout with bristly hairs and stout prickles; stem diffusely branched; leaves petioled, ovate or oval, membranaceous, acute, rounded or cordate at the base, acutely lobed or toothed; racemes lateral, slender, 2 – 5-flowered, shorter than the petioles; corolla-lobes lanceolate, acute, white; anthers acuminate; berry globose, yellow. — Waste places, Florida to North Carolina. Probably introduced from Mexico. June – Sept. ① — Stem 1° – 2° high. Leaves 3′ – 6′ long. Corolla 6″ – 9″ wide, the lobes recurved.

7. **S. mammosum,** L. Pubescent with stellate hairs, and the stem, petioles, and nerves of the leaves armed with stout flattened prickles; stem stout, erect; leaves large, ovate, sinuate-lobed, slightly cordate; racemes cymose, long-peduncled, many-flowered; corolla large, purple, with ovate spreading lobes; berry conical-ovate. — Road-sides, and waste ground, Florida and Georgia. July – Sept. ① — Stem 2° – 3° high. Leaves 6′ – 9′ long. Corolla 1½′ wide. Anthers narrowed upward, on slender filaments. Calyx unarmed.

8. **S. hirsutum,** Nutt., not of Dunal. Dwarf, hirsute; leaves broadly obovate, very obtuse, nearly entire, narrowed at the base, prickly on the midrib; racemes 3-flowered; peduncles filiform. — Milledgeville, Georgia. — Roots profusely creeping. Stem a span high, beset with yellowish hairs. Calyx very rough. Flowers purple? (*)

S. PSEUDO-CAPSICUM, L., the JERUSALEM CHERRY, is sometimes spontaneous near dwellings.

S. TUBEROSUM, L., is the IRISH POTATO, as it is here called; S. MELONGENA, L., the EGG-PLANT; and S. LYCOPERSICUM, L. (Lycopersicum esculentum, *Mill.*) the TOMATO.

2. CAPSICUM, Tourn. Red-Pepper.

Calyx cup-shaped, 5 – 7-toothed. Corolla wheel-shaped, 5 – 7-cleft, plaited. Stamens 5 – 7, inserted on the throat of the corolla, exserted: anthers connivent, opening lengthwise. Stigma obtuse. Berry juiceless, partly 2 – 3-celled, many-seeded. — Herbs or shrubs, with acrid juice, solitary flowers, and red berries.

1. **C. frutescens,** L. Shrubby, smooth; stem branching; leaves oblong-ovate, obtuse, entire, acute or rounded at the base, petioled, often by pairs; calyx obscurely toothed, long-peduncled, erect; berry oblong, shorter than the peduncle. — South Florida. — Stem 1° – 2° high. Leaves 1′ long. Flowers in the forks of the branches. Berry 4″ – 6″ long.

3. PHYSALIS, L. Ground-Cherry.

Calyx 5-toothed, inflated in fruit, and enclosing the juicy berry. Corolla short-bell-shaped, plaited, 5-lobed or 5-angled. Stamens 5, inserted on the tube of the corolla: anthers separate, opening lengthwise. Stigma obtuse. Seeds flat, kidney-shaped. — Diffusely branching herbs, with alternate petioled leaves, which are often by pairs, and solitary nodding flowers in their axils, or in the forks of the branches.

* *Perennial: peduncles commonly longer than the petiole: corolla 8″ – 10″ in diameter, spotted in the throat with brown or purple.*

1. **P. viscosa,** L. Pubescent or hairy; root slender, elongated; stems erect, at length diffusely branched, angled; leaves ovate, entire or angularly toothed, acute or obtuse, rounded or cordate at the base; calyx hairy, with triangular-ovate lobes; corolla pubescent, yellow, with 5 large brown spots in the throat; style and filaments purple; anthers yellow; fruiting calyx oblong-ovate, sharply 5-angled, concave or truncate at the base; berry globose, viscid. (P. heterophylla, *Nees.* P. Pennsylvanica, *L.*) — Dry light or sandy soil, Florida to Mississippi, and northward. July – Oct. — Stems ½° – 2° high, sometimes purple; the pubescence often viscid, jointed, or rough. Leaves 1′ – 2′ long, the uppermost rarely acute and unequal at the base. Corolla obscurely lobed. Fruiting calyx 1′ – 1½′ long.

2. **P. lanceolata,** Michx. Pubescent; leaves ovate-lanceolate or oblong, obtuse, but often attenuate at the apex, entire, wavy, or coarsely and obtusely toothed on the margins, acute and commonly very unequal at the base; calyx pubescent, the lobes long-acuminate from an ovate base; corolla 5-lobed, or somewhat 10-lobed or toothed, yellow in the throat; fruiting calyx ovate or globose-ovate, 5-angled. (P. Elliottii, *Kunze.* P. maritima, *M. A. Curtis?*) — Dry sandy soil, Florida to North Carolina. July – Oct. —. Stem 1° high, erect or diffuse. Leaves 1′ – 3′ long. Fruiting calyx 1′ – 1½′ long, smooth or hairy.

3. **P. angustifolia,** Nutt. Smooth; stem low, erect or at length diffuse, 3 – 4-angled; leaves linear or lanceolate, obtuse, entire, narrowed gradually at the base into a winged petiole; calyx lobes short, triangular-ovate, obtuse, tomentose on the margins; corolla yellow, brownish-purple in the throat,

5-lobed; fruiting calyx oblong-ovate, wing-angled, depressed at the base. — Low sandy places along the coast, West Florida. July – Sept. — Stem 6′ – 12′ high. Leaves 2′ – 5′ long, equal at the base, somewhat fleshy. Corolla sometimes 1′ in diameter. Fruiting calyx 9″ – 12″ long. Anthers yellow.

* * *Annual: peduncles shorter than the petiole: corolla 4″ – 6″ in diameter, yellow, spotted in the throat with green or brown.*

4. **P. angulata,** L. Smooth throughout; stem sharply 4-angled, erect or at length diffusely procumbent; leaves oblong-ovate, acuminate, sharply toothed, long-petioled, slightly unequal at the base, the lower ones often somewhat cordate; calyx-lobes triangular-lanceolate, as long as the tube; corolla pale-yellow, 5-toothed, spotted with green in the throat; filaments smooth; anthers purple; fruiting calyx globose-ovate, equally 10-angled, reticulated with purple veins, depressed at the base. — Fields and waste ground, Florida, and northward. — July – Oct. — Stem 1° – 4° long. Leaves 2′ – 3′ long. Fruiting calyx 1′ long.

5. **P. pubescens,** L. Tomentose or villous with soft often viscid hairs, rarely smoothish; stem diffusely branched, 4-angled, with one side rounded; leaves long-petioled, mostly acute, obtusely toothed, wavy-margined, or entire, ovate, and mostly slightly cordate and unequal at the base; calyx-teeth subulate, twice as long as the tube; corolla bright yellow, 5- or somewhat 10-toothed, brown in the throat; filaments hairy; anthers purplish; fruiting calyx oblong-ovate, sharply 5-angled, truncate at the base. (P. hirsuta, *Dunal.* P. pruinosa, *Ell.* P obscura, *Michx.*) — Fields and waste grounds, common. July – Oct.— Stems 1° – 3° long. Leaves 1′ – 2′ long.

4. NICANDRA, Adans.

Calyx 5-parted, inflated, 10-toothed at the base. Corolla bell-shaped, plaited, obscurely 5-lobed. Stamens 5: anthers separate, opening lengthwise. Berry juiceless. — A smooth erect branching annual, with ovate-oblong toothed or lobed petioled leaves, and solitary axillary nodding purple flowers.

1. **N. physaloides,** Gært. — (Atropa physaloides, *L.*) — Waste and cultivated ground. Introduced. July – Sept. — Stem 1° – 3° high, with angled branches. Leaves 2′ – 5′ long, decurrent on the petiole. Corolla white in the throat. Fruiting calyx 5-angled, enclosing the globose berry.

5. LYCIUM, L.

Calyx 4 – 5-cleft. Corolla funnel-shaped, 5 – 10-cleft or toothed. Stamens 4 – 5: anthers opening lengthwise, separate. Stigma capitate. Berry not enclosed in the calyx. — Erect or twining often spiny shrubs, with entire alternate or clustered leaves, and axillary or terminal flowers.

1. **L. Carolinianum,** Michx. Stem erect, spiny, much branched; leaves small, clustered, club-shaped, fleshy; flowers solitary, axillary, purple; calyx and corolla 4-cleft; stamens 4, exserted. — Salt marshes, Florida to South Carolina. July – Sept. — Shrub 3° – 5° high. Leaves $1\frac{1}{2}'$ long. Corolla small, hairy within. Berry red.

6. DATURA, L. Jamestown-Weed. Thorn-Apple.

Calyx tubular, terete or angled, 5-cleft, separating near the base, the upper portion deciduous. Corolla funnel-shaped; the limb plaited, 5-lobed, convolute in the bud. Stamens 5. anthers opening lengthwise. Capsule spiny, imperfectly 4-celled, 4-valved, many-seeded. — Strong-scented poisonous herbs, with petioled oblong or ovate mostly toothed leaves, and large solitary flowers in the forks of the branches.

1. **D. Stramonium,** L. Smooth; stem stout, forking; leaves ovate or oblong-ovate, acute, sinuate-toothed; corolla sharply 5-toothed, white, twice as long as the 5-angled calyx; capsule erect. — Var. Tatula. Larger; leaves often cordate; stem and corolla purplish. — Waste ground, very common. June – Oct. — Stem 1° – 3° high. Leaves 4′ – 8′ long. Corolla 3′ – 4′ long.

2. **D. Metel,** L. Pubescent; stem stout, branching; leaves ovate, entire or slightly toothed; corolla white, 10-toothed; calyx loose, terete; capsule nodding. — North and South Carolina, *Curtis*. Introduced. — Stems 3° – 4° high. Leaves 6′ – 8′ long, Corolla 6′ long.

The Petunia, Night-Blooming Jessamine (Cestrum), and Tobacco (Nicotiana), belong to this family.

Order 101. GENTIANACEÆ. (Gentian Family.)

Chiefly smooth and bitter herbs, with colorless juice, opposite entire partly sheathing exstipulate leaves, and regular often showy flowers. — Calyx 4 – 12-parted, or 4 – 12-cleft. Corolla 4 – 12-lobed, convolute, rarely valvate or imbricated, in the bud, hypogynous. Stamens alternate with the lobes of the corolla, and inserted on its tube: anthers 2-celled. Ovary single, with numerous anatropous ovules. Stigmas 1 – 2. Capsule 1-celled, or imperfectly 2 – 4-celled by the introversion of the margins of the valves, septicidally 2-valved. Placentæ parietal. Seeds numerous. Embryo minute, in the axis of fleshy albumen.

Synopsis.

* Corolla convolute, or (in Obolaria) imbricated in the bud. Testa membranaceous. — Leaves sessile.

1. SABBATIA. Style conspicuous, deciduous. Stigmas linear, twisted. Corolla wheel-shaped, 5 – 12-parted.
2. EUSTOMA. Style conspicuous, persistent. Stigmas roundish, flat. Corolla tubular, 4 – 5-parted.
3. GENTIANA. Stigmas sessile, flat, persistent. Corolla bell-shaped or funnel-form, 4 – 5-lobed, mostly with plaited appendages between the lobes.
4. BARTONIA. Calyx and corolla 4-lobed. Stigmas sessile. Leaves scale-like.
5. OBOLARIA. Calyx 2-leaved. Corolla 4-lobed, imbricated in the bud.
6. FRASERA. Corolla wheel-shaped, 4-parted, the lobes with a large depressed gland in the middle.

* * Corolla folded in the bud. Testa woody. Petioles elongated.

7. LIMNANTHEMUM. Leaves floating, cordate. Flowers clustered on the petiole.

1. SABBATIA, Adans. American Centaury.

Calyx 5 – 12-parted. Corolla wheel-shaped, 5 – 12-parted, withering-persistent. Stamens 5 – 12, inserted on the throat of the corolla: anthers sagittate, mostly recurved. Style conspicuous: stigmas linear or oblong, twisted. Capsule globose, 1-celled, 2-valved, many-seeded. — Annual or biennial branching herbs, with cymose or panicled white or purple showy flowers.

** Calyx and corolla mostly 5-parted.*

+– Flowers in corymbose cymes, white, turning yellowish: branches opposite.

1. **S. lanceolata,** Torr. & Gray. Stem tall, terete below, 4-angled and corymbosely branched above, the branches opposite; leaves ovate or roundish, 3 – 5-nerved, acute or obtuse, clasping; the upper ones distant, lanceolate, and very acute; cymes large, loosely many-flowered; lobes of the corolla (often 6) obovate-oblong, twice as long as the filiform calyx-lobes. (S. corymbosa, *Baldw.*) — Wet pine barrens, Florida to North Carolina. July. — Stem 2° – 3° high. Leaves 1′ – 1½′ long; the lowest minute. Corolla 10″ wide, turning yellowish in drying.

2. **S. paniculata,** Pursh. Stem virgate, wing-angled throughout, commonly much branched from the base; leaves clasping, lanceolate, 3-nerved, mucronate, the upper and floral ones linear, the lowest tufted, oblong-obovate; cymes very numerous, densely few-flowered, leafy; lobes of the corolla obovate, one third longer than the linear calyx-lobes. — Low grassy meadows, Florida to North Carolina. August. — Stem 9′ – 18′ high. Leaves ½′ – 1′ long. Corolla ½′ wide.

3. **S. macrophylla,** Hook. Glaucous; stem terete, corymbosely branched above; the branches opposite; leaves thick, erect, ovate-lanceolate, acute, clasping, 3 – 5-nerved; cymes large, flat-topped; corolla small, the lobes thrice as long as the very short bristle-like calyx-lobes. — Wet pine barrens, Florida, and westward. July and Aug. — Stem rigid, hollow, 2° – 2½° high. Leaves 1½′ – 3′ long. Corolla 5″ – 6‴ wide.

+– +– Flowers in panicled cymes, purple: branches opposite.

4. **S. angularis,** Pursh. Stem square, wing-angled, erect, paniculately much branched, often from near the base, the branches opposite; leaves numerous, ovate, clasping, 3 – 5-nerved, often as long as the joints, the upper ones acute; lobes of the corolla oblong, about twice as long as the linear calyx-lobes. — Low rich grounds, Florida, and northward. Aug. — Stem 1° – 2° high. Leaves 1′ – 1½′ long. Corolla 1′ wide.

5. **S. brachiata,** Ell. Stem erect, terete, paniculately branched near the summit; the branches opposite, spreading; leaves sessile, lanceolate, the upper ones linear, acute, the lowest clustered; flowers in small loose peduncled cymes, terminating the branches, and forming an oblong or pyramidal panicle; lobes of the corolla narrowly oblong, twice as long as the linear calyx-lobes. — Low grounds in the middle and upper districts, and northward. July and Aug. — Stem 2° high. Leaves 1′ long. Corolla 1′ wide.

+ + + *Flowers scattered, on long peduncles, white or purple: branches alternate.*

6. **S. Elliottii,** Steud. Stem low, terete, paniculately much branched from near the base, the branches diffuse; leaves small, sessile; the lowest obovate, the upper linear; lobes of the corolla 3 – 4 times as long as the short filiform calyx-lobes. (S. paniculata, *Ell.*) — Open pine barrens, Florida to South Carolina. Aug. and Sept. — Stems $\frac{1}{2}'$ – $1\frac{1}{2}'$ high. Leaves $3''$ – $6''$ long. Corolla $8''$ – $10''$ wide.

7. **S. gracilis,** Pursh. Stem slightly 4-angled, erect or reclining, diffuse, the branches 1 – 3-flowered; leaves linear or oblong-linear, the uppermost almost filiform; flowers terminating the short branchlets; lobes of the corolla obovate-oblong, rather longer than the filiform calyx-lobes. — Low grassy pine barrens and meadows, Florida to Mississippi, and northward. July and Aug. — Stem slender, 1° – $1\frac{1}{2}$° long. Leaves $1'$ – $1\frac{1}{2}'$ long. Corolla $12''$ – $15''$ wide.

8. **S. stellaris,** Pursh. Stem obscurely 4-angled, slender, paniculately branched, the branches elongated; leaves somewhat fleshy, the lowest lanceolate or oblong, obtuse, the upper linear, acute; flowers on very long peduncles; lobes of the corolla oblong, longer than the filiform calyx-lobes. — Salt marshes, Florida, and northward. Aug. and Sept. — Stem 1° – 3° high. Leaves $1'$ – $2'$ long. Peduncles $1'$ – $4'$ long. Corolla $1\frac{1}{2}'$ wide.

9. **S. calycosa,** Pursh. Stem low, terete; leaves thin, lanceolate or oblong, obtuse, narrowed at the base, the lowest petioled; flowers few; corolla white, 5 – 7-lobed, shorter than the lanceolate leafy calyx-lobes. — River swamps, Florida to North Carolina, and westward. July and Aug. — Stem $6'$ – $12'$ high, rigid. Leaves $1'$ – $1\frac{1}{2}'$ long. Corolla $8''$ – $10''$ wide.

* * *Calyx and corolla* 7 – 12*-parted: flowers purple.*

10. **S. chloroides,** Pursh. Stem erect, terete, simple, or 1 – 2-forking, 1 – 5-flowered; leaves lanceolate, sessile, uniform, or the lowest spatulate-oblong and the upper linear, acute; corolla large, 8 – 12- (mostly 10-) parted, commonly more than twice as long as the linear or subulate calyx-lobes. — Margins of pine-barren ponds and swamps, Florida, and northward. July and Aug. — Stem 1° – $1\frac{1}{2}$° high. Leaves $1'$ long. Corolla $1\frac{1}{2}'$ – $3'$ wide.

11. **S. Boykinii,** Gray. Stem mostly simple, somewhat angled; leaves lanceolate-oblong, or the lowest elliptical; flowers single or 3 – 7 in a terminal capitate cluster, sessile and 2-bracted; corolla 8 – 9-parted, much longer than the oblong-lanceolate calyx-lobes. — Middle Georgia, *Dr. Boykin.* — Stem 1° high. Leaves $1'$ – $2'$ long. Corolla $1\frac{1}{2}'$ wide.

12. **S. gentianoides,** Ell. Stem erect, simple, slender; lowest leaves lanceolate or oblong, narrowed at the base; the others long, linear, sessile; flowers large, in axillary and terminal clusters, or terminal and solitary; corolla 8 – 10-parted, 2 – 3 times as long as the subulate calyx-lobes; anthers straight. — Low pine barrens, Georgia, Florida, and westward. July and Aug. — Stem 1° – 2° high. Leaves $1\frac{1}{2}'$ – $3'$ long. Corolla $2'$ wide.

2. EUSTOMA, Don.

Calyx bell-shaped, 4 – 5-parted, sharply 4 – 5-angled; the lobes subulate, keeled. Corolla tubular, 4 – 5-lobed, membranaceous at the base, withering-persistent; the lobes erect, lanceolate-oblong, acute. Stamens 4 – 5, partly exserted, inserted on the middle of the tube of the corolla: anthers sagittate, introrse, opening lengthwise. Style conspicuous, erect, persistent: stigmas round-ovate, thick, at length spreading, with the margins revolute. Capsule oblong, obtuse, 1-celled, the margins of the valves slightly inflexed. Placentæ spongy, sutural. Seeds minute, globose, sessile. — Herbs, with oblong glaucous clasping leaves, and panicled showy purple or blue flowers.

1. **E. exaltatum,** Griseb. Stem (2° – 3° high) terete, glaucous, paniculately forking above; leaves mucronate, decurrent at the base, the upper ones lanceolate; flowers long-peduncled, terminating the branches, blue; calyx-lobes as long as the tube of the corolla, dilated and membranaceous at the base. — South Florida. ⓘ — Corolla 12″ – 15″ long.

3. GENTIANA, Tourn. Gentian.

Calyx 4 – 5-parted. Corolla bell-shaped or funnel-shaped, 4 – 5-lobed, often with plaited toothed appendages between the lobes. Stamens 4 – 5. Stigmas 2, sessile, compressed, persistent. Capsule 1-celled, 2-valved, many-seeded; the seeds sutural, or covering the inner face of the valves. — Flowers showy, solitary or clustered, axillary and terminal.

* *Annual: corolla funnel-shaped, destitute of appendages: anthers versatile: capsule sessile: seeds wingless.*

1. **G. quinqueflora,** Lam. Stem 4-angled, slender, branching; leaves ovate or ovate-lanceolate, acute, cordate and slightly clasping at the base, 3 – 5-nerved; flowers 3 – 5, terminating the short branches; corolla blue, rather slender, naked in the throat; with ovate bristle-pointed entire lobes, much longer than the subulate calyx-lobes. — Dry soil along the mountains, Georgia, and northward. Aug. and Sept. — Stem 1° – 2° high. Leaves 1′ long. Corolla 1′ long.

2. **G. crinita,** Frœl. Stem terete below, the upper portion and branches 4-angled; leaves lanceolate, acute, closely sessile, the lowest narrowed into a petiole; flowers terminal, on long angular peduncles; calyx-lobes 4, ovate-lanceolate, acute, strongly keeled, as long as the tube of the corolla; lobes of the corolla 4, rounded, fimbriate, nearly as long as the tube; seeds scaly. — Damp soil along the mountains, Georgia, and northward. Oct. and Nov. — Stem 1° – 2° high, often much branched. Leaves 1′ – 2′ long. Corolla blue, 1½′ – 2′ long.

* * *Perennial: corolla bell-shaped, with plaited toothed appendages between the lobes: anthers erect, mostly connivent: capsule pedicelled: seeds commonly winged.*

3. **G. ochroleuca,** Frœl. Stem low, smoothish; leaves oblong or obovate-oblong, narrowed at the base, the upper ones narrower and acute; flowers in a dense mostly terminal cluster; corolla open, yellowish-white, ½ – ⅓ longer

than the erect linear-lanceolate calyx-lobes; the ovate lobes twice as long as the nearly entire appendages; seeds wingless. — Dry sandy woods, Florida to North Carolina. Sept. and Oct. — Stem 6′ – 12′ high. Corolla 1½′ long, striped within with green and purple veins. Anthers separate.

4. **G. Elliottii.** Stem rough and slightly pubescent; leaves lanceolate or linear-lanceolate, rough-margined; clusters axillary and terminal; calyx-lobes linear-lanceolate, twice as long as the tube; corolla large, open, bright-blue, lined within with yellow and deeper blue, the erect or spreading ovate acute lobes twice as long as the 2-cleft fimbriate appendages; seeds lanceolate, narrowly winged, covering the entire inner face of the valves. (G. Catesbæi, *Ell.*) — Banks of streams and ditches, in the lower and middle districts. Oct. — Stem 1° – 1½° high. Corolla 1½′ long. Flowers rarely solitary.

Var. **parvifolia.** Stem tall (2° high), slender; leaves short (½′ – 1′ long), sessile, ovate or oblong-ovate, rounded or cordate at the base, rigid; calyx-lobes erect, lanceolate, twice as long as the tube; appendages of the corolla broad, unequally 2-cleft, fimbriate. — Pine-barren swamps near the coast, Georgia and Florida. — Corolla 2′ long.

Var. ? **latifolia.** Stem low (6′ – 12′ high), rigid; leaves (2′ – 3′ long) membranaceous, oblong or ovate-oblong, acute at each end; calyx-lobes linear, shorter than the tube, spreading; appendages of the corolla equally divided into two slender bristle-pointed nearly entire lobes. — River-banks, Middle Florida. — Corolla 1′ – 1½′ long.

5. **G. Saponaria,** L. Stem smooth; leaves ovate-lanceolate or oblong, narrowed at the base, rough-margined; calyx-lobes linear or spatulate, acute, half as long as the corolla; corolla light blue; the lobes short and broad, obtuse, erect, or converging, longer than the 2-cleft minutely-toothed appendages; seeds acute, narrowly winged, covering the valves. (G. Catesbæi, *Walt.*) — Moist woods on the mountains of North Carolina, and northward. Sept. and Oct. — Flowers clustered.

6. **G. Andrewsii,** Griseb. Stem smooth (1° – 2° high); leaves ovate-lanceolate, acute, narrowed at the base; flowers clustered, axillary and terminal; calyx-lobes ovate, spreading, shorter than the tube; corolla (1′ long) club-shaped, inflated, closed; the broad and rounded lobes shorter than the slightly toothed appendages; capsule at length partly exserted; seeds broadly winged. (G. Saponaria, *Frœl.*) — Mountains of North Carolina, and northward. Sept. and Oct.

7. **G. angustifolia,** Michx. Stem low, smooth, 1-flowered; leaves linear, fleshy; calyx-lobes linear, erect, half as long as the corolla; corolla large, bright blue, the lobes ovate, twice as long as the broad toothed appendages. — Varies with the corolla, green without and white within. — Low pine barrens, Florida to North Carolina. Nov. and Dec. — Stem 4′ – 10′ high. Corolla 2′ long.

4. BARTONIA, Muhl.

Calyx 4-parted. Corolla 4-parted. Stamens 4: anthers small. Stigmas sessile. Capsule 1-celled, 2-valved, septicidal. Seeds covering the inner surface

of the valves. — Small annual herbs, with erect filiform stems, scale-like subulate leaves, and white flowers.

1. **B. verna,** Muhl. Stem (2′ – 6′ high) simple or sparingly branched, succulent, few-flowered; calyx-lobes lanceolate-subulate, one third as long as the oblong or obovate obtuse spreading white lobes of the corolla; anthers oblong; capsule roundish. (Centaurella verna, *Michx.*) — Damp pine barrens near the coast, Florida to North Carolina. Feb. – April.

2. **B. tenella,** Muhl. Stem (6′ – 12′ high) branched; the branches, like the leaves, opposite or alternate, many-flowered; calyx-lobes subulate, as long as the tube of the greenish-white corolla; lobes of the corolla erect, acute; anthers globose; capsule oblong-lanceolate. (Centaurella paniculata, *Michx.*) — Swamps, Florida to Mississippi, and northward. Sept. and Oct. — Flowers much smaller than in No. 1.

5. OBOLARIA, L.

Calyx of 2 spatulate bract-like sepals. Corolla bell-shaped, 4-cleft, imbricated in the bud. Stamens 4: anthers round-cordate. Style short: stigma 2-lipped. Capsule ovoid, 1-celled. Seeds numerous, covering the valves. — A low sparingly branched perennial herb, with opposite wedge-obovate leaves, and single or clustered axillary and terminal purplish flowers.

1. **O. Virginica,** L. — Rich shady woods, South Carolina, and northward. March and April. — Plant smooth, purplish, 3′ – 8′ high. Branches generally 3-flowered.

6. FRASERA, Walt. American Columbo.

Calyx 4-parted. Corolla wheel-shaped, 4-parted, the lobes each with a depressed fringed gland on the upper face. Stamens 4: anthers nodding. Style persistent: stigmas spreading. Capsule compressed. Seeds few, large, winged, borne on the margins of the valves. — Tall and smooth perennial herbs, with whorled or opposite sessile leaves and branches, and cymes of greenish-yellow flowers, disposed in a large terminal panicle.

1. **F. Carolinensis,** Walt. Stem (3° – 8° high) erect; leaves and branches mostly four in a whorl, lance-oblong, the lowest spatulate; panicle pyramidal; corolla-lobes oblong, mucronate, dotted with purple. — Rich soil in the upper districts of Georgia, and northward. July. — Lowest leaves 1° long. Corolla 1′ wide. Root large and bitter to the taste.

7. LIMNANTHEMUM, Gmel.

Calyx 5-parted. Corolla wheel-shaped, 5-parted, the lobes infolded in the bud, ciliate, and glandular-crested at the base. Stamens 5. Style short or none: stigma 2-lobed, persistent. Capsule 1-celled, opening irregularly. Seeds few or many. Testa woody. — Perennial aquatic herbs, with floating circular or cordate spongy leaves and white peduncled flowers clustered near the summit of the long petiole.

1. **L. lacunosum,** Griseb. Leaves (1′ – 2′ wide) cordate, entire, smooth; petioles (6′ – 12′ long) filiform; seeds smooth. (Villarsia cordata, *Ell.*) — Shallow ponds, Florida, and northward. June and July.

2. **L. trachyspermum,** Gray. Leaves (3′ – 5′ wide) circular, crenate, rough and pitted beneath; petioles stout, dotted, elongated; seeds glandular-roughened. (Villarsia trachysperma, *Ell.*) — Ponds in deep water, Florida to North Carolina, and westward. April – June.

ORDER 102. APOCYNACEÆ. (DOGBANE FAMILY.)

Herbs or shrubs, with acrid milky juice, mostly opposite entire exstipulate leaves, and regular cymose or panicled flowers. — Calyx free, 5-parted, imbricated in the bud, persistent. Corolla bell-shaped, funnel-shaped, or salver-form, 5-lobed, convolute in the bud. Stamens 5, distinct, inserted on the tube of the corolla: anthers mostly sagittate, erect, introrse. Pollen granular. Ovaries 2, distinct, their styles united. Fruit few – many-seeded. Seeds anatropous or amphitropous, naked, or bearing a tuft of down at the apex (*comose*). Embryo straight in scarce albumen.

Synopsis.

* Fruit a many-seeded follicle.

+– Seeds comose. Leaves opposite.

1. APOCYNUM. Corolla bell-shaped, with scale-like appendages at the base of the lobes. Herbs.
2. FORSTERONIA. Corolla funnel-shaped. Stamens inserted at the base of the corolla. Twining shrubs.
3. ECHITES. Corolla funnel- or salver-shaped. Stamens inserted above the base of the corolla.

+– +– Seeds naked. Leaves opposite or alternate.

4. AMSONIA. Corolla funnel-shaped. Flowers panicled. Leaves alternate.
5. VINCA. Corolla salver-shaped. Flowers axillary. Leaves opposite.

* * Fruit a few-seeded drupe.

6. VALLESIA. Corolla salver-shaped. Leaves alternate. Flowers in cymes.

1. APOCYNUM, Tourn. INDIAN HEMP.

Calyx 5-parted. Corolla bell-shaped, 5-lobed, with scale-like appendages at the base of the lobes. Stamens inserted on the base of the corolla: anthers sagittate. Stigma sessile, 2-lobed. Follicles long and slender. Seeds numerous, obovoid, comose. — Perennial erect branching herbs, with opposite oval or oblong mucronate petioled leaves, and small white flowers in lateral and terminal cymes.

1. **A. cannabinum,** L. Stem smooth, with erect branches; leaves oval or oblong, mucronate, pubescent beneath; cymes terminal, close-flowered, shorter than the leaves; calyx-lobes lanceolate, as long as the tube of the greenish-white corolla; lobes of the corolla erect. (A. pubescens, *R. Br.*) — Var. GLABERRI-

MUM. Smooth throughout; leaves narrower, often acute at each end. — Dry or damp soil, Florida, and northward. July and Aug. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Corolla 2″ long.

2. **A. androsæmifolium,** L. Stem smooth, with spreading branches; leaves oval or ovate, smooth, or pubescent beneath; cymes axillary and terminal, long-peduncled, commonly exceeding the leaves, loose-flowered; calyx-lobes ovate, shorter than the tube of the white or pale rose-colored corolla; lobes of the corolla spreading or revolute. — Rich soil, North Carolina, and northward. June and July. — Stem 2′ – 3′ high. Corolla twice as large as in No. 1.

2. FORSTERONIA, Meyer.

Calyx 5-parted, mostly glandular at the base within. Corolla funnel-shaped, 5-cleft, without appendages. Filaments slender, inserted on the base of the corolla: anthers linear-sagittate. Nectary of 5 distinct or partly united thickish glands. Stigma simple or 2-lobed, 5-angled. Follicle slender. Seeds linear-oblong, comose. — Twining shrubs, with opposite petioled leaves, and small flowers in lateral and terminal cymes.

1. **F. difformis,** A. DC. Leaves ovate-lanceolate, lanceolate or linear, acuminate, narrowed into a petiole, smooth, or, like the branchlets, pubescent when young; cymes spreading, as long as the leaves; flowers greenish. (Echites difformis, *Walt.*) — River-banks, Florida to North Carolina. May – Aug. — Stem twining, 10° – 15° high. Leaves 2′ – 3′ long. Corolla 4″ long. Follicles 6′ – 9′ long.

3. ECHITES, P. BROWNE.

Calyx 5-parted, with 3 – 5 glands at the base within. Corolla salver- or funnel-shaped, 5-lobed; the tube mostly elongated, and dilated above the insertion of the stamens. Filaments very short: anthers sagittate, bearing the pollen, and adhering to the stigma in the middle. Nectary of 5 distinct or partly united glands. Style simple: stigma thick, with a spreading membranous appendage at the base. Follicles long and slender. Seeds linear-oblong, comose or plumose. — Erect or twining shrubs, with opposite leaves, and cymose axillary and terminal mostly fragrant flowers.

1. **E. umbellata,** Jacq. Smooth; stem twining; leaves distant, oval, mucronate, slightly cordate, short-petioled, parellel-veined; peduncles shorter than the leaves, 3 – 7-flowered; calyx-lobes ovate, acuminate; corolla salver-form, the cylindrical tube (2′ long) slightly dilated above the insertion of the stamens, four times as long as the rounded spreading lobes, pubescent within; anthers awnless; stamens inserted near the middle of the tube. — South Florida. — Leaves 1½′ – 2′ long, recurved and folded. Flowers white?

2. **E. Andrewsii.** Smooth; stem low, erect or twining; leaves approximate, oval or oblong, mucronate, acute or rounded at the base, the margins revolute; peduncles axillary, 3 – 5-flowered, shorter than the leaves; calyx-lobes lanceolate-subulate; tube of the corolla much dilated above the insertion

of the stamens, bell-shaped, scarcely longer than the ovate spreading lobes; anthers tapering into a long bristle-like awn; glands of the nectary 5, rounded, as long as the ovaries. (E. suberecta, *Andr.* Neriandra suberecta, *A. DC.*) — Sandy shores, South Florida. — Stem 1° – 2° high. Leaves 1½′ – 2′ long. Tube of the corolla 1′ long, ½′ wide.

4. AMSONIA, Walt.

Calyx small, 5-parted. Corolla funnel-form, 5-lobed, bearded within. Stamens inserted above the middle of the tube: anthers oblong, obtuse. Stigma globose, surrounded by a cup-shaped membrane. Follicles slender. Seeds in a single row, terete, truncated at each end, naked. — Erect branching perennial herbs, with alternate leaves, and small pale blue flowers in a terminal panicle.

1. **A. Tabernæmontana,** Walt. Stem smooth, branching above; leaves ovate, ovate-lanceolate, or lanceolate, acute or acuminate at each end, glaucous beneath, short-petioled; tube of the corolla slender, smooth, or woolly above, many times longer than the minute calyx; follicles spreading. (A. latifolia, *Michx.* A. salicifolia, *Pursh.*) — Swamps and wet banks, Florida to Mississippi, and northward. May and June. — Stem 2° high. Leaves 1′ – 4′ long, often slightly pubescent beneath. Panicle open or contracted. Follicles 4′ – 6′ long.

2. **A. ciliata,** Walt. Stem hairy, at length much branched above; leaves very numerous, linear or linear-lanceolate, acute at each end, fringed on the margins; corolla smooth. — Dry sandy soil, Florida to North Carolina. April and May. — Stem at length 2° – 3° high. Leaves 1′ – 2′ long. Corolla pale blue or white. Follicles more slender than those of the preceding.

5. VINCA, L. Periwinkle.

Calyx 5-parted. Corolla salver-form, 5-lobed, thickened or angular at the throat, the narrow tube hairy within. Anthers oblong, longer than the filaments. Glands 2, alternating with the ovaries. Style slender: stigma thick, with an inverted cup-shaped membrane at the base. Follicles 2, linear, erect. Seeds oblong, rough, naked. — Herbs or shrubby plants, with opposite short-petioled leaves, and axillary mostly solitary showy flowers.

1. **V. rosea,** L. Shrubby, pubescent; stem erect, branching; leaves oblong, rounded at the apex, mucronate; flowers solitary or by pairs, nearly sessile; lobes of the corolla white or pale rose-color, obliquely obovate, mucronate, shorter than the downy tube; a row of hairs at the throat and another on the tube below. — South Florida, and in the streets of Apalachicola, probably introduced. Flowering through the summer.

6. VALLESIA, Ruiz and Pavon.

Calyx 5-parted. Corolla salver-shaped, 5-lobed. Stamens inserted on the throat of the corolla: anthers cordate-ovate, longer than the slender filaments. Nectary none. Ovaries 4-ovuled. Stigma club-shaped. Drupe mostly solitary,

obovoid, 1 – 2-seeded. Seeds naked, club-shaped, furrowed. Radicle thick, inferior. — Shrubs. Leaves alternate. Cymes long-peduncled, opposite the leaves.

1. **V. chiococcoides,** Kunth. Smooth; leaves lanceolate-oblong, acute at each end, short-petioled; cymes forking, spreading, as long as the leaves, many-flowered; lobes of the corolla linear, shorter than the tube, hairy within; style slender; stigma 2-lobed, globose below the apex. — South Florida. — Leaves 1½′ – 2′ long. Corolla 3″ long. Drupe 4″ long, 1-seeded.

Order 103. ASCLEPIADACEÆ. (Milkweed Family.)

Erect or twining herbs or shrubs, with milky juice, entire commonly opposite leaves without stipules, and umbellate or cymose flowers. — Calyx 5-parted, persistent. Corolla 5-parted, mostly valvate in the bud, hypogynous, deciduous. Stamens 5, inserted on the base of the corolla, the filaments united in a tube (*gynostegium*) which encloses the ovaries, and bears appendages of various forms, which are collectively termed the *stamineal crown*. Anthers erect, 2 – 4-celled, expanding above into a thin membrane. Pollen united in flattened waxy pear-shaped masses, which are equal in number to the cells of the anthers, and fixed to the five angular processes of the stigma by a slender stalk, pendulous or horizontal. Styles 2, the thick and fleshy stigma common to both. Fruit a follicle. Seeds anatropous, imbricated on the thick and at length free placenta, and commonly bearing at the hilum a tuft of hairs (*coma*). Embryo straight in thin albumen. Cotyledons leafy.

Synopsis.

Tribe I. **ASCLEPIADEÆ.** — Pollen-masses 10, fixed by pairs to the cleft processes of the flat or conical stigma, pendulous.

* Stamineal crown single, 5-leaved.

← Lobes of the corolla reflexed or spreading.

1. ASCLEPIAS. Leaves of the crown enclosing a horn-like appendage.
2. ACERATES. Leaves of the crown without appendages.

← ← Lobes of the corolla erect.

3. PODOSTIGMA. Stigma long-pedicelled. Corolla smooth, wavy. Stem erect.
4. METASTELMA. Stigma sessile or pedicelled. Corolla downy within. Stems twining.

* * Stamineal crown single, 5-lobed.

5. SEUTERA. Stigma conical. Crown deeply 5-parted.
6. CYNOCTONUM. Stigma flat. Crown crenately 5 lobed.

* * * Stamineal crown double.

7. SARCOSTEMMA. Outer crown annular; the inner one 5-leaved.

Tribe II. **GONOLOBEÆ.** — Pollen-masses 10, fixed by pairs at the angles of the depressed stigma, horizontal.

8. GONOLOBUS. Crown simple, annular. Stems twining. Leaves cordate.

1. ASCLEPIAS, L. Milkweed. Silkweed.

Calyx 5-parted. Corolla wheel-shaped, deeply 5-parted, reflexed. Crown composed of 5 hooded leaves, each containing an incurved horn-like appendage. Pollen-masses 10, by pairs, each pair occupying the contiguous cells of adjacent anthers, and suspended by a slender stalk from the projecting angles of the stigma. Follicle many-seeded. Seeds obovate, flat, usually comose. — Perennial herbs, with mostly simple (not twining) stems, and opposite alternate or whorled leaves. Flowers in lateral (between the leaves) and terminal umbels.

§ 1. *Stems herbaceous: seeds comose.*

* *Follicles spiny: leaves opposite.*

1. **A. Cornuti,** Decaisne. Softly pubescent; stem stout, erect, obscurely 4-angled; leaves oval-oblong, short-petioled, mucronate, soon smooth above, the lowest somewhat cordate; umbels numerous, many-flowered, long-peduncled; corolla greenish-purple, one fourth as long as the pedicels; leaves of the crown pale purple, ovate, obtuse, longer than the incurved horn; follicle ovate-oblong, woolly, armed with soft spines. (A. Syriaca, *L.*) — Fields and road-sides, New Berne, North Carolina, *Croom*, and northward. June and July. — Stem 3° – 4° high, sometimes branched. Leaves 4′ – 8′ long. Pedicels 1′ – 1½′ long, purplish. Corolla ½′ wide.

* * *Follicles spineless.*

+ *Leaves opposite, oval or oblong, narrowed into a petiole.*

2. **A. phytolaccoides,** Pursh. Stem tall, smooth; leaves ovate or ovate-lanceolate, tapering at each end, paler and minutely pubescent beneath, membranaceous; umbels long-peduncled, many-flowered; pedicels filiform, drooping, nearly as long as the peduncle; corolla pale greenish; leaves of the crown white, truncated, 2-toothed, shorter than the subulate incurved horn. — Low grounds along the mountains, and northward. June and July. — Stem 3° – 5° high. Leaves 6′ – 9′ long. Pedicels 2′ – 3′ long.

3. **A. purpurascens,** L. Stem smooth; leaves ovate-oblong, acute, short-petioled, paler and pubescent beneath; umbels 1 – 2, terminal, peduncled, many-flowered; pedicels half as long as the peduncle, and twice as long as the dark purple corolla; leaves of the crown oblong, abruptly contracted above, twice as long as the incurved horn and nearly sessile gynostegium. — Thickets and borders of woods, Tennessee, North Carolina, and northward. June and July. — Stem 2° – 3° high. Leaves 4′ – 7′ long. Pedicels 9″ – 15″ long, pubescent.

4. **A. variegata,** L. Stem stout, leafless below, pubescent in lines; leaves oval, oblong, or obovate, cuspidate, smooth on both sides; umbels 3 – 5, pubescent, closely flowered, the upper ones corymbose; pedicels erect, as long as the peduncle; corolla white; leaves of the crown roundish, longer than the purplish gynostegium, equalling the thick awl-pointed incurved horn. (A. nivea, *Pursh.*) — Dry open woods and borders of fields, Florida to Mississippi, and northward. May and June. — Stem 2° – 3° high, purplish. Leaves rather thick, 2′ – 3′ long. Peduncles 9″ – 12″ long.

5. **A. incarnata,** L., var. **pulchra.** Hairy; stem erect, branching; leaves oblong or oblong-lanceolate, acute, nearly sessile; umbels numerous, somewhat corymbose, long-peduncled, often compound; pedicels erect, much shorter than the peduncle; corolla small, reddish-purple; leaves of the crown flesh-color, ovate, as long as the slender incurved horns, and twice as long as the short-stalked gynostegium. (A. pulchra, *Willd.*) — Swamps in the upper districts, Georgia, and northward. June and July. — Stem 3° – 4° high. Leaves 4′ – 6′ long.

6. **A. tomentosa,** Ell. Pubescent or villous; stem stout, very leafy; leaves oblong or oblong-lanceolate, cuspidate, undulate, somewhat hoary beneath, abruptly short-petioled; umbels 4 – 10, alternate, nearly sessile, many-flowered; pedicels three times as long as the large greenish corolla; leaves of the crown obovate, truncated, shorter than the gynostegium and the broad abruptly pointed erect horn. (A. aceratoides, *M. A. Curtis.*) — Dry sandy pine barrens, Florida to North Carolina. June and July. — Stem 1° – 4° high. Leaves 2′ – 3′ long, thick, on rather slender petioles. Pedicels 1′ long. Corolla ½′ wide. Follicles lanceolate, tomentose, 4′ – 6′ long.

7. **A. obovata,** Ell. Tomentose; stem stout, very leafy; leaves thick, oblong-oval or obovate, cuspidate, undulate; the midrib, like the short (2″ long) petiole, very thick and prominent; umbels nearly sessile, closely 10 – 14-flowered; the stout pedicels barely twice as long as the large yellowish-green corolla; leaves of the crown purplish, twice as long as the gynostegium, and equalling the incurved horn; follicle tomentose. — Dry gravelly or sandy soil, Georgia, Florida, and westward. June and July. — Stem 1° – 2° high. Leaves and flowers as large as those of the preceding.

+ + Leaves opposite, lanceolate or linear, narrowed into a petiole.

8. **A. cinerea,** Walt. Stems erect, slender, pubescent in lines; leaves long, narrowly linear, distant, spreading; umbels 3 – 6, commonly longer than the leaves, 5 – 7-flowered, the slender drooping pedicels longer than the peduncle; flowers small, purple without, ash-color within; leaves of the crown obliquely truncated, 2-toothed at the inner angle, shorter than the gynostegium, longer than the thick horn; follicle smooth, linear. — Flat sandy pine barrens, Florida to South Carolina. June – Aug. — Stem 1° – 2° high. Leaves 2′ – 3′ long, 1″ wide, somewhat glaucous; the uppermost often minute. Corolla 3″ – 4″ wide. Follicle 3′ – 4′ long.

9. **A. viridula,** n. sp. Stem slender, pubescent in lines; leaves linear, erect; umbels shorter than the leaves, 6 – 12-flowered, the erect or spreading pedicels as long as the peduncle; corolla small, yellowish-green; leaves of the crown oblong, spreading at the apex, rather longer than the erect subulate horn, and twice as long as the gynostegium; follicle smooth, linear. — Pine-barren swamps, West Florida. June and July. — Stem 10′ – 15′ high. Leaves 2′ long. Corolla 3″ wide. Follicle 3′ long.

10. **A. paupercula,** Michx. Stem smooth, tall; leaves elongated, linear or linear-lanceolate, acuminate, rough-margined, the upper ones small and remote; umbels 2 – 5, corymbose, 6 – 10-flowered; pedicels pubescent, about as

long as the peduncle; corolla deep red; leaves of the crown oblong, erect, bright orange, more than twice as long as the subulate incurved horn and the short-stalked gynostegium; follicle lanceolate, minutely pubescent. — Marshes, Florida, and northward. June and July. — Stem 2° – 4° high. Leaves 6′ – 12′ long. Corolla 3″ – 4″ long.

11. **A. Curassavica,** L. Stem somewhat shrubby, branching, slightly pubescent, leafy to the summit; leaves thin, lanceolate, acuminate, smooth; umbels corymbose, long-peduncled, 8 – 10-flowered, pubescent; pedicels much shorter than the peduncle; corolla scarlet; leaves of the crown bright orange, oblong, erect, longer than the stalked gynostegium, shorter than the thick incurved horn; follicle ovate-lanceolate, velvety. — South Florida. April – Nov. — Stem 1° – 2° high. Leaves 3′ – 4′ long. Corolla 3″ long.

+ + + + *Leaves opposite, ovate or oblong, more or less cordate, nearly sessile.*

12. **A. rubra,** L. Smooth; stem simple, naked at the summit; leaves ovate or ovate-lanceolate, acuminate, rounded or slightly cordate at the base, very short-petioled; umbels 1 – 3, terminal, sessile, few-flowered; lobes of the corolla lanceolate, acute, reddish-purple; leaves of the crown oblong, acute, purplish, barely longer than the subulate incurved horn, and twice as long as the short-stalked gynostegium; follicle smooth. (A. laurifolia, *Michx.*) — Wet pine barrens, Georgia, and northward. June – July. — Stem 2° – 4° high. Leaves 2′ – 4′ long.

13. **A. obtusifolia,** Michx. Smooth and somewhat glaucous; stem erect; leaves oblong, undulate, mucronate, cordate and partly clasping at the base; umbels 1 – 3, lateral and terminal, long-peduncled, many-flowered; corolla greenish-purple; leaves of the crown truncated and somewhat toothed at the apex, rather longer than the gynostegium, much shorter than the subulate incurved horn; follicle smooth. — Sandy soil, Florida, and northward. June – July. — Stem 2° – 3° high. Leaves 2′ – 3′ long, the midrib very broad. Corolla-lobes 3″ long. Pedicels pubescent.

14. **A. amplexicaulis,** Michx. Smooth and glaucous; stem declining, very leafy; leaves large, fleshy, ovate, obtuse, cordate and clasping at the base, veined with white; umbels 3 – 6, lateral and terminal, many-flowered, the smooth and slender pedicels shorter than the peduncle; corolla ash-color; leaves of the crown oval, obtuse, white, longer than the gynostegium, and the nearly straight horn. — Dry sandy pine barrens, Florida to North Carolina. April and May. — Stems several, 1° – 2° long. Leaves 4′ – 5′ long, the midrib broad and prominent.

+ + + + *Upper and lower leaves mostly opposite, the middle ones whorled.*

15. **A. quadrifolia,** Jacq. Somewhat pubescent; stem slender, simple; leaves thin, ovate or ovate-lanceolate, acuminate, contracted into a petiole, pale beneath; umbels 2 – 5, many-flowered, the slender peduncle longer than the pedicels; corolla pale-pink; leaves of the crown white, oblong, obtuse, twice as long as the gynostegium and stout horn. — Mountains of Carolina, and northward. June – Aug. — Stem 1° – 1½° high. Leaves 2′ – 3′ long.

16. **A. verticillata,** L. Stem slender, branching, pubescent; leaves narrowly linear, with the margins revolute, 4 – 5 in a whorl; umbels several, small, the peduncle and pedicels nearly equal; corolla greenish; leaves of the crown white, roundish, half as long as the slender incurved horn. — Open woods and fence-rows, Florida, and northward. July – Sept. — Stem 2° – 3° high. Leaves 1′ – 2′ long. Follicle smooth.

+ + + + + *Leaves alternate, or the lowest opposite.*

17. **A. tuberosa,** L. Hirsute; stem erect or declining, widely branched above, very leafy; leaves varying from linear to oblong, acute, short-petioled; umbels numerous, corymbose; corolla yellowish-orange; leaves of the crown bright orange, erect, oblong-lanceolate, twice as long as the gynostegium, and rather longer than the slender incurved horn. — Light dry soil, common. June and July. — Stem 1° – 2° long.

18. **A. Michauxii,** Decaisne. Pubescent; stems several, short, prostrate; leaves linear, erect, the lower ones mostly opposite; umbels 1 – 3, terminal, sessile or peduncled; flowers gray and purple; leaves of the crown ovate, spreading, as long as the subulate horns, and longer than the gynostegium; follicle long, linear-lanceolate, tomentose. (A. angustifolia, *Ell.*, *Michx.* in part.) — Low sandy pine barrens, Florida to South Carolina. April – May. — Stems 6′ – 12′ long. Leaves 3′ – 4′ long. Follicle 4′ – 5′ long. Flowers fragrant.

§ 2. *Stem shrubby: seeds mostly naked.*

19. **A. perennis,** Walt. Stem branched, pubescent in lines, shrubby at the base; leaves thin, lanceolate or oblong-lanceolate, tapering at each end, paler beneath; umbels 5 – 7, long-peduncled, pubescent, the upper ones corymbose; corolla small, white; leaves of the crown spreading, half as long as the needle-shaped, erect horn; follicle ovate-lanceolate, smooth. (A. parviflora, *Pursh.* A. debilis, *Michx.*) — Muddy banks of rivers, Florida to South Carolina. June – Aug. — Stem 1° – 2° high. Leaves 2′ – 4′ long.

2. ACERATES, Ell.

Leaves of the crown destitute of a horn-like appendage. Otherwise like Asclepias.

* *Leaves opposite.*

1. **A. viridiflora,** Ell. Pubescent; stem stout, simple; leaves varying from oval or obovate to lanceolate, acute, obtuse, or emarginate, undulate, short-petioled; umbels lateral and terminal, nearly sessile, densely many-flowered; flowers small, greenish; leaves of the crown oblong, erect, as long as the sessile gynostegium. — Dry sterile soil, Florida, and northward. June and July. — Stem 1° – 1½° high. Leaves 1½′ – 2½′ long.

2. **A. connivens,** Decaisne. Stem stout, simple, pubescent above; leaves nearly sessile, erect, mucronate, the lower ones approximate, oblong or oblong-obovate, the upper more distant, smaller and lanceolate; umbels 3 – 6, 6 – 9-flowered, the stout peduncle and pedicels nearly equal, pubescent; flowers large, greenish; leaves of the crown oblong, incurved, twice as long as the gynoste-

gium, with their rounded summits connivent over it. — Wet pine barrens, Florida and Georgia. June and July. — Stem 1° – 2° high. Leaves 1′ – 2′ long, somewhat fleshy. Corolla 8″ – 10″ wide.

* * *Leaves alternate.*

3. **A. paniculata,** Decaisne. Closely pubescent; stem angular, often branching; leaves oblong or lance-oblong, acute or obtuse at each end, short-petioled; umbels corymbose, often compound; corolla large, greenish, spreading or nearly erect; leaves of the crown oblong, obtuse, ascending, shorter than the nearly sessile gynostegium. (Podostigma viridis, *Ell.*) — Dry pine barrens, Florida to South Carolina. July. — Stem 1° – 1½° high, leafy to the summit. Leaves 3′ – 4′ long. Corolla 1′ wide.

4. **A. longifolia,** Ell. Pubescent; stem terete; leaves linear and linear-lanceolate, acute at each end, slightly petioled, rough-margined, the lowest commonly opposite, sometimes whorled; umbels pubescent, slender-peduncled, many-flowered, alternate, opposite or whorled; flowers small, pale purple; corolla reflexed; leaves of the crown deep purple, oval, shorter than the gynostegium, and adnate to its stalk; follicle lanceolate, tomentose. (Asclepias angustifolia, *Michx.* in part.) — Low pine barrens, Florida, and northward. July. — Stem 1° – 1½° high. Leaves 3′ – 6′ long. Corolla 4″ wide.

3. PODOSTIGMA, Ell.

Calyx 5-parted. Corolla 5-parted, with the lobes erect. Leaves of the crown destitute of a horn, ascending, incurved-beaked at the apex, united with the base of the long and slender gynostegium. Stigma small, depressed. Seeds comose. — A low pubescent simple-stemmed perennial herb, with opposite lanceolate sessile leaves, and few-flowered umbels on lateral peduncles.

1. **P. pubescens,** Ell. — Low pine barrens, Florida to North Carolina. June – Oct. — Root tuberous. Stem 6′ – 12′ high. Leaves erect, 1′ – 2′ long. Umbels of 4 – 6 orange-colored flowers. Corolla 4″ – 5″ long, as long as the pedicel, longer than the short peduncle, the oblong lobes wavy on the margins. Follicles linear-lanceolate, tomentose, 4′ – 6′ long, many-seeded. Seeds oval, winged.

4. METASTELMA, R. Brown.

Calyx 5-parted. Corolla bell-shaped, the lobes mostly hoary-pubescent within Crown 5-leaved, inserted on the base or on the summit of the gynostegium. Stigma flat. Follicles slender, smooth. Seeds comose. — Twining shrubs, with smooth leaves. Umbels few-flowered. Flowers small, white.

1. **M. Schlectendalii,** Decaisne. Branches pubescent; leaves oblong or obovate, cuspidate, rather acute at the base, on slender petioles; peduncles 3 – 6-flowered, as long as the petiole, shorter than the pedicels; sepals obtuse, ciliate; lobes of the corolla ovate-lanceolate, incurved, densely pubescent within; leaves of the crown oblong, inserted on the summit of the slender gynostegium, as long as the stigma. — South Florida. — Leaves ½′ – 1½′ long, the margins revolute. Corolla 2″ long. Gynostegium 5-winged at the base.

2. **M. parviflorum,** R. Brown. Herbaceous? stem very slender, pubescent in lines; leaves smooth, linear-lanceolate, falcate, acuminate, rounded at the base, short-petioled, drooping; umbels sessile or short-peduncled, 4 – 6-flowered; sepals smooth, acute; lobes of the corolla linear, incurved at the apex, very pubescent within; leaves of the crown inserted on the base of the sessile gynostegium, linear, erect, exceeding the stigma. — South Florida. — Leaves 6″ – 8″ long. Corolla 1″ long.

3. **M. Fraseri,** Decaisne. Branches slender, pubescent in lines; leaves oval or round-ovate, mucronate; umbels sessile; pedicels short, smooth; lobes of the corolla ovate, acute, thickish, pubescent on the margins; leaves of the crown linear, as long as the corolla, longer than the gynostegium. — In Carolina, *Fraser.* (*)

5. SEUTERA, Reich.

Calyx 5-parted. Corolla somewhat wheel-shaped, 5-parted, with narrow acute smooth lobes. Crown simple, deeply 5-parted, inserted on the base of the sessile gynostegium; the lobes ovate, flattened. Stigma conical, longer than the anthers. Follicles smooth. Seeds comose. — A slender partly shrubby twining vine, with fleshy linear drooping leaves, and long-peduncled umbels of greenish flowers.

1. **S. maritima,** Decaisne. (Lyonia, *Ell.*) — Salt marshes, Florida to North Carolina. July and Aug. — Stem shrubby at the base; the branches twining around rushes and saline grasses. Leaves 2′ long. Peduncles commonly longer than the leaves, many-flowered. Lobes of the corolla lanceolate, imbricated in the bud. Lobes of the crown obtuse, as long as the stigma.

6. CYNOCTONUM, Meyer.

Calyx 5-parted. Corolla wheel-shaped, 5-parted. Stamineal crown simple, enclosing the base of the sessile gynostegium, 5-lobed or 5-crenate. Anthers membranaceous at the apex. Stigma flattish. Follicles linear, spreading or reflexed. Seeds comose. — Perennial or shrubby twining plants. Leaves mostly cordate. Umbels lateral.

1. **C.? scoparium.** Stems much branched, pubescent in lines, shrubby at the base; leaves thin, linear, cuspidate, tapering into a petiole, smoothish; umbels nearly sessile, few-flowered, shorter than the leaves; calyx-lobes ovate, obtuse, pubescent like the pedicels; corolla smooth, the spreading lobes lanceolate, obtuse; crown crenately 5-lobed, shorter than the gynostegium; follicles very slender, widely spreading; seeds linear, wingless. (Cynanchum scoparium, *Nutt.*) — Dry rich soil, near the coast, West Florida to Key West. — Leaves ½′ – 1′ long. Flowers green, less than a line long. Follicles 1′ long.

7. SARCOSTEMMA, R. Brown.

Calyx 5-parted. Corolla wheel-shaped, 5-parted. Crown double; the exterior forming a ring at the base of the corolla; the interior longer, 5-leaved Stigma pointed, notched. Follicles slender, smooth. Seeds comose. — Erect or

twining shrubs. Leaves often cordate. Flowers yellow or white, in lateral umbels.

1. **S. crassifolium,** Decaisne. Stem smooth and twining; leaves nearly sessile, oblong, mucronate, rounded at the base; peduncles stout, 8 – 12-flowered, 2 – 3 times as long as the leaves and pedicels; lobes of the corolla ovate, obtuse, spreading; the outer surface, like the calyx and pedicels, pubescent; leaves of the inner crown oval, rather exceeding the stigma and anthers. — South Florida. — Leaves somewhat fleshy, 9″ – 12″ long. Corolla 3″ wide. Ovary villous.

8. GONOLOBUS, Michx.

Calyx 5-parted, spreading. Corolla wheel-shaped, 5-parted, the lobes spreading, twisted in the bud. Crown a wavy-lobed ring at the throat of the corolla. Gynostegium flattened, depressed. Anthers opening transversely. Pollen-masses horizontal. Follicles inflated, angled, and often armed with soft spines. Seeds comose. — Twining herbs, with opposite petiolate cordate leaves, and yellowish or purplish flowers, in lateral corymbs or umbels.

1. **G. macrophyllus,** Michx. Hairy; leaves oblong-ovate, cordate, abruptly acuminate; umbels peduncled, several-flowered; pedicels spreading, unequal, shorter than the petioles; corolla dull-purplish, conical in the bud; the lanceolate obtuse lobes more or less pubescent within, green at the apex; follicle strongly ribbed. — Low thickets, Florida, and northward. July and Aug. — Leaves 2′ – 6′ long.

2. **G. hirsutus,** Michx. Hirsute; leaves round-ovate, cordate, abruptly acute; umbels about as long as the petioles; corolla yellowish-green, ovate in the bud, the ovate obtuse lobes pubescent without; follicles armed with soft spines. — Light rich soil, Florida, and northward. — Leaves 4′ – 6′ long.

3. **G. prostratus,** Baldw. Stem dividing at the base into many divaricate branches, 6′ – 12′ long, hairy; lower leaves often reniform, the upper cordate, generally acute, all slightly hairy on both sides, and ciliate; umbels axillary, 3-flowered; flowers small, purplish; petals ovate, obtuse; follicles oval, smooth. — Sand-hills near the Altamaha River, Georgia, *Baldwin.* (*)

Order 104. OLEACEÆ. (Olive Family.)

Trees or shrubs, with opposite entire or pinnate exstipulate leaves, and perfect polygamous or dicœcious flowers. — Calyx 4-toothed. Corolla 4-lobed or 4-petalous, valvate in the bud, sometimes wanting. Stamens 2 – 7. Ovary 2-celled, with 2 suspended anatropous ovules in each cell. Style single or none. Fruit 1 – 2-seeded. Embryo straight, in hard albumen.

Synopsis.

Tribe I. **OLEINEÆ.** Fruit a drupe or berry. Flowers with both calyx and corolla. Leaves simple, entire.

1. OLEA. Flowers polygamous. Corolla salver-shaped, with short lobes.
2. CHIONANTHUS. Flowers perfect. Corolla wheel-shaped, with elongated lobes.

TRIBE II. **FRAXINEÆ.** Fruit a samara. Flowers dicœcious, apetalous. Leaves pinnate.

3. FRAXINUS. Flowers in lateral and terminal panicles. Calyx minute or rarely wanting. Trees.

TRIBE III. **FORESTIEREÆ.** Fruit a drupe. Flowers dicœcious or perfect, apetalous. Leaves simple.

4. FORESTIERA. Flowers mostly dicœcious, from scaly axillary buds. Shrubs.

1. OLEA, Tourn. OLIVE.

Calyx 4-toothed. Corolla short-salver-form, 4-lobed. Stamens 2. Style short. Stigma globose or 2-lobed. Drupe mostly 1-seeded, oily. — Trees or shrubs, with opposite coriaceous entire leaves, and small white fragrant flowers, in axillary racemes or panicles.

1. **O. Americana,** L. Smooth; leaves oblong or obovate-oblong, narrowed into a petiole; racemes compound, shorter than the leaves; flowers polygamo-dicœcious, bracted; drupe ovoid, dark purple. — Light soil, near the coast, Florida to North Carolina. March and April. — A shrub or small tree, with whitish bark and evergreen leaves. Drupe as large as a pea, bitter and astringent.

2. CHIONANTHUS, L. FRINGE-TREE.

Calyx small, 4-cleft. Corolla wheel-shaped, 4-parted, with long and linear lobes. Stamens 2 – 4, included. Style very short: stigma notched. Drupe fleshy, 1-seeded. — A shrub, with oblong entire deciduous leaves, and delicate white flowers in slender axillary panicles, appearing with the leaves.

1. **C. Virginica,** L. — Light soil, Florida, and northward. April and May. — Shrub 6° – 10° high. Leaves smooth or pubescent, narrowed into a petiole. Panicles longer than the leaves, leafy-bracted. Flowers on slender drooping pedicels. Corolla-lobes linear, 1′ long. Drupe ovoid, purple.

3. FRAXINUS, Tourn. ASH.

Flowers dicœcious and (in our species) apetalous. Calyx 4-lobed or toothed, minute, sometimes wanting. Stamens 2 – 4: filaments shorter than the large anthers. Stigma 2-cleft. Fruit (samara) dry, winged above, 1 – 2-seeded. Cotyledons elliptical. Radicle slender. — Trees. Leaves petioled, odd-pinnate, deciduous.

* *Fruit naked and terete or barely margined and 2-edged at the base, winged above: leaflets 7 – 9, stalked.*

1. **F. Americana,** L. (WHITE ASH.) Branches and petioles smooth; leaflets ovate-oblong or lanceolate-oblong, acuminate, entire, or slightly serrate above, smooth on the upper surface, pubescent or glaucous beneath; fruit terete, striate, dilated at the apex into a cuneate-linear or lanceolate obtuse or notched wing. (F. acuminata and F. juglandifolia, *Lam.*) — Swamps, Florida to Mis-

sissippi, and northward. April. — A large tree. Leaflets 2′ – 4′ long. Fruit $1\frac{1}{2}'$ long.

2. **F. pubescens,** Lam. (RED ASH.) Branchlets and petioles velvety-pubescent; leaflets oblong-ovate or ovate-lanceolate, gradually acuminate, bright green above, pale and more or less pubescent beneath; fruit acute at the base, flattish and somewhat 2-edged, gradually dilated upwards into a long lanceolate and often notched wing. (F. tomentosa, *Michx.*) — Swamps, Florida and northward. March and April. — A small tree.

3. **F. viridis,** Michx. (GREEN ASH.) Glabrous throughout; leaflets ovate or oblong-ovate, more or less toothed, smooth and green both sides; fruit as in No. 2, of which it may be a variety. — Swamps, Florida to Mississippi, and northward. March and April. — A small tree.

* * *Fruit winged all round the seed-bearing portion: leaflets* 5 – 9, *short-stalked.*

4. **F. quadrangulata,** Michx. (BLUE ASH.) Branchlets square, smooth; leaflets oblong-ovate or oblong, acuminate, sharply serrate, when young pubescent beneath; fruit linear-oblong, obtuse at both ends. — Tennessee, and northward. May.

5. **F. platycarpa,** Michx. (WATER ASH.) Branchlets terete, smooth or pubescent; leaflets ovate or elliptical, serrate or almost entire, often pubescent beneath; fruit broadly winged, oblong-obovate or oblong with a tapering and acute base, sometimes 3-winged. (F. triptera and F. pauciflora, *Nutt.*) — Deep river-swamps, Florida to Mississippi, and northward. March and April. — A small tree.

4. FORESTIERA, Poir. (ADELIA, *Michx.*)

Flowers dicœcious or polygamous, from axillary scaly buds. Corolla none. Calyx minute, 4-lobed. Sterile flowers single or 3 together in the axils of imbricated scaly bracts. Stamens 3–7. Fertile flowers peduncled. Styles slender. Stigma capitate. Ovary 2-celled. Drupe ovoid, 1-seeded, black or blue. — Shrubs. Leaves opposite, petioled, serrulate. Flowers minute, greenish, preceding the leaves.

1. **F. porulosa,** Poir. Leaves coriaceous, smooth at maturity, nearly sessile, ovate-lanceolate or oblong, obtuse, entire, punctate underneath, the margins entire and revolute; drupe short-ovoid. — Coast of East Florida, *Michaux, Leitner.*

2. **F. ligustrina,** Poir. More or less pubescent; the branchlets roughened with fine tubercles; leaves rather membranaceous, obovate or obovate-oblong, mostly obtuse, serrulate (1′ long), contracted at the base into a distinct petiole; drupe oval-oblong. — Rocky banks, Florida, Georgia, and westward.

3. **F. acuminata,** Poir. Glabrous or slightly pubescent when young; branchlets sometimes spinescent; leaves membranaceous (2′ – 3′ long), ovate-lanceolate or ovate and tapering-acuminate at both ends, somewhat serrulate, slender-petioled; drupe elongated-oblong, mostly pointed when young. — Wet grounds, Georgia to Tennessee, and northwestward.

Division III. APETALOUS EXOGENOUS PLANTS.

Floral envelopes single, consisting of a calyx only, or altogether wanting.

Order 105. ARISTOLOCHIACEÆ. (Birthwort Family.)

Herbs or woody vines, with alternate petioled mostly cordate and entire leaves, and solitary peduncled dull-colored flowers. — Calyx adherent to the 6-celled ovary, tubular, valvate in the bud. Stamens 6 – 12, more or less united with the styles: anthers adnate, extrorse. Fruit 6-celled, few – many-seeded. Seed anatropous. Embryo minute, at the base of fleshy albumen.

1. ASARUM, Tourn. Asarabacca.

Calyx regular, 3-lobed. Stamens 12, the filaments partly united with the style, and usually prolonged beyond the anthers. Capsule fleshy, globose, opening irregularly — Aromatic perennial herbs, with creeping stems, long-petioled cordate or kidney-shaped leaves, and axillary peduncled flowers.

§ 1. Asarum. — *Calyx bell-shaped, adnate to the ovary, 3-parted: filaments free or nearly so: stigma 6-lobed. — Leaves deciduous.*

1. **A. Canadense,** L. (Wild Ginger-root.) Pubescent; leaves 2, kidney-shaped; calyx-lobes acuminate; filaments as long as the style. — Mountains of North Carolina, and northward. April and May. — Flowers short-peduncled, purple within.

§ 2. Heterotropa. — *Calyx inflated, nearly free from the ovary, 3-cleft: filaments united with the ovary: styles* 6: *stigmas 2-cleft. — Leaves evergreen, smooth, mottled.*

2. **A. Virginicum,** L. Leaves round-cordate; calyx inflated-bell-shaped, with rounded lobes; stigmas deeply 2-cleft. — Rich shady woods in the upper districts, Georgia, and northward. April and May. — Leaves single or 2 – 3 together, 2′ long. Flowers 8″ – 9″ long, nearly sessile at the base of the petioles, greenish without, dull purple within.

3. **A. arifolium,** Michx. Leaves oblong-cordate; calyx pitcher-shaped, with rounded lobes; stigmas slightly 2-cleft. — Shady woods in the lower districts, Florida to North Carolina. March and April — Leaves 3′ – 4′ long, auriculate at the base, long-petioled. Calyx 1′ long, distinctly peduncled, contracted above the middle, dark purple within.

2. ARISTOLOCHIA, Tourn. Birthwort.

Calyx tubular, commonly bent and inflated above the ovary. Anthers 6, sessile, adnate to the 3 – 6-lobed or angled stigma. Capsule 6-valved. — Erect or

twining herbs or shrubs. Leaves alternate, cordate at the base. Flowers long-peduncled, axillary, or near the base of the stem.

** Low herbs.*

1. **A. Serpentaria,** L. Stems single or clustered, pubescent, zigzag and leafy above; leaves short-petioled, varying from ovate to linear-lanceolate, cordate or hastate at the base; flowers near the base of the stem, on bracted spreading peduncles; calyx tortuous, 3-lobed, dull purple. (A. hastata, *Nutt.*) — Shady woods, Florida to Mississippi, and northward. June – Aug. — Stem 8′ – 12′ high. Leaves 2′ – 4′ long. Calyx shaped like the letter S.

*** Woody vines: capsule oblong, six-angled, 3′ – 4′ long.*

2. **A. Sipho,** L'Her. Stem smoothish; leaves large, orbicular-cordate, slightly pubescent beneath; peduncles slender, solitary, with a roundish clasping bract near the base; calyx curving upward, with the broad spreading brownish-purple border obscurely 3-lobed. — Rich woods along the mountains, Georgia, and northward. May. — Stem climbing high. Leaves 6′ – 12′ broad. Calyx shaped like a Dutch pipe, 1½′ long.

3. **A. tomentosa,** Sims. Hoary-pubescent; leaves cordate; peduncles opposite the leaves, bractless, woolly; calyx bent in the middle, the greenish rugose unequally 3-lobed border reflexed, thickened and dark brown at the nearly closed throat. — River-banks, Florida, to the mountains of North Carolina, and westward. May. — Stem very long. Leaves 3′ – 5′ long. Calyx similar in shape to the preceding, but smaller.

Order 106. NYCTAGINACEÆ. (Four-o'clock Family.)

Herbs or shrubs with tumid joints. Leaves mostly opposite, simple, petioled, without stipules. — Calyx colored and resembling a corolla, tubular-bell-shaped or funnel-shaped, free from the 1-celled and 1-ovuled ovary, plaited in the bud, contracted in the middle, with the upper portion deciduous. Stamens 1 – several, hypogynous: anthers 2-celled, roundish. Ovule erect. Style simple: stigma simple or branched. Achenium enclosed in the indurated, mostly ribbed, often glandular base of the calyx. Embryo coiled or folded around copious mealy albumen. Cotyledons leafy. Radicle inferior.

Synopsis.

* Flowers surrounded by a calyx-like involucre.
1. OXYBAPHUS. Involucre open, membranaceous, 5-lobed. Herbs.

** Flowers without an involucre.
2. BOERHAAVIA. Flowers perfect. Embryo coiled. Herbs.
3. PISONIA. Flowers dicœcious. Embryo straight. Shrubs.

1. OXYBAPHUS, Vahl.

Flowers perfect, 1 – 5 in a cluster, surrounded by an open cup-shaped 5-lobed involucre. Calyx-tube very short; the bell-shaped limb 5-lobed, deciduous.

Stamens 3, exserted. Style slender: stigma capitate. Achenium enclosed in the indurated ribbed persistent base of the calyx. — Erect herbs, from thick perennial roots. Leaves opposite. Flowers terminal, purple or rose-color.

1. **O. angustifolius,** Sweet. Stem smoothish, branching above; leaves linear-lanceolate, smooth, obtuse at the sessile base; the upper ones distant, acute; flowers loosely panicled; involucre with rounded hairy lobes, at length enlarged and strongly nerved, 3-flowered; base of the calyx villous. — South Carolina, and westward. — Stem 3° – 4° high. Leaves 2′ long. Calyx 4″ – 5″ long, whitish, veiny.

2. **O. albidus,** Sweet. Stem erect, 4-angled, furrowed, glandular, pubescent; branches opposite; leaves oblong-lanceolate, roughish; peduncles opposite, the lower ones solitary, the upper clustered; involucre hairy; base of the calyx 5 – 6-angled, almost hispid. (Allionia albida, *Ell.*) — Near Columbia, S. C., *Elliott.*

2. BOERHAAVIA, L.

Flowers perfect. Involucre none. Calyx-tube cylindrical or obconical, 5-ribbed; the limb colored, funnel-shaped, 5-lobed, deciduous. Stamens 1 – 4: anthers minute, roundish. Style slender: stigma obtuse. Embryo folded. — Annual herbs, with diffuse branching stems, and opposite ovate or rounded leaves. Flowers small, in solitary or panicled clusters.

1. **B. erecta,** L. Stems ascending, branched from the base, smooth, tumid at the joints; branches alternate; leaves ovate or roundish, acute or mucronate, often more or less cordate, wavy along the margins, whitened and minutely dotted with black beneath; clusters 3 – 5-flowered, in ample panicles; stamens 2; fruit smooth, obconical, truncate, strongly ribbed. — Cultivated ground, Florida to South Carolina. July – Sept. — Stem 1° – 3° long. Leaves rather thick, 2′ – 3′ long. Flowers small, purple.

2. **B. hirsuta,** Willd. Stem diffuse, alternately branched, minutely pubescent, hirsute above; leaves ovate or oblong-ovate, mucronate, obtuse at the base, undulate, smooth, and similarly colored on both sides, ciliate on the margins; clusters 3 – 6-flowered, forming a loose spreading panicle; flowers minute; calyx-limb hairy at the apex; fruit obconical, rounded at the apex, with the ribs glandular-viscid. — South Florida. — Stem stout, 2° – 3° long. Leaves 1′ – 2′ long.

3. **B. viscosa,** Lag. Viscid or minutely pubescent; stem terete, straight; branches opposite; leaves ovate-oblong or ovate-lanceolate, mucronate, acute at the base, smooth, whitish beneath, slender-petioled; peduncles solitary, axillary, 2-cleft, mostly shorter than the leaves; flowers capitate, minute; stamens 3; fruit club-shaped, acutish, with the ribs glandular. — South Florida. — Stem 2° – 3° long. Leaves 1′ – 1½′ long.

3. PISONIA, Plum.

Flowers dicœcious. Involucre none. Calyx 5- or 10-toothed, funnel-shaped in the sterile flowers, tubular and persistent in the fertile. Stamens 6 – 10, exserted:

anther-cells distinct. Style mostly lateral: stigma many-cleft. Fruit terete or ribbed, smooth or glandular. Embryo straight. Cotyledons folded around the albumen. — Trees or shrubs, with opposite or alternate leaves, and mostly rose-colored flowers in corymbose cymes.

1. **P. aculeata,** L. Spiny; stem smooth; branches widely spreading; leaves alternate, short-petioled, ovate or elliptical, acute or obtuse, smooth; cymes terminal, peduncled, pubescent, many-flowered; calyx of the sterile flower 10-toothed; stamens 7; fruit club-shaped, 10-striate, and beset with 5 rows of shining viscid glands. — South Florida. — Shrub 5° high; the spines short and recurved. Leaves 1′ – 2′ long.

2. **P. obtusata,** Swartz. Smooth, spineless; leaves oblong, rounded at the apex, tapering at the base, short-petioled, revolute on the margins, rigid; cymes long-peduncled, many-flowered, the branches horizontal; fertile calyx 5-cleft, with the lobes narrow and acute; stamens 7; fruit oblong, many-furrowed, glandless; capsule truncate. — South Florida. — Leaves opposite, 1′ – 2′ long, light brown beneath. Flowers 1″ – 2″ long.

Order 107. PHYTOLACCACEÆ. (Pokeweed Family.)

Herbs or shrubs, with alternate entire leaves, and apetalous 3-bracted racemed or spiked flowers. — Calyx composed of 4 – 5 nearly equal sepals, more or less united at the base, unchanged in fruit. Stamens hypogynous, as many as the sepals and alternate with them, or numerous, free, or united at the base; sterile ones none: anthers 2-celled, introrse. Ovary simple or compound. Ovules amphitropous or campylotropous, solitary, erect. Styles as many as the ovaries. Fruit of 1 – many carpels. Albumen copious or none. Embryo annular, rarely straight. Radicle inferior.

Synopsis.

Suborder I. PETIVERIEÆ. Fruit simple. Cotyledons convolute. Leaves stipulate.

1. PETIVERIA. Fruit an achenium with reflexed spines at the apex. Embryo straight in scanty albumen.
2. RIVINA. Fruit a berry. Embryo forming a ring around the albumen.

Suborder II. PHYTOLACCEÆ. Fruit compound. Cotyledons flat. Leaves exstipulate.

3. PHYTOLACCA. Fruit a berry, composed of numerous carpels arranged in a circle.

1. PETIVERIA, Plum.

Calyx 3-bracted, 4-parted, herbaceous. Stamens 4 – 8: anthers linear. Ovary simple, 1-celled. Ovule single, erect, amphitropous. Stigma many-cleft. Achenium wedge-shaped, compressed, 2-lobed at the apex, each lobe

armed with 2 – 3 reflexed spines. Albumen almost none. Embryo straight. Cotyledons unequal, convolute. — Shrubby tropical plants, with entire stipulate leaves, and small greenish flowers in an elongated and slender spike.

1. **P. alliacea,** L. — South Florida. — Stem 2° – 3° high, closely pubescent. Leaves 3′ – 4′ long, oblong or obovate, obtuse, narrowed into a short petiole, pubescent beneath. Spikes filiform, single or by pairs, 6′ – 12′ long. Calyx-lobes linear, incurved at the apex. Stamens 4 – 5. Achenia erect, appressed to the rachis, with two spines at each lobe. Stipules subulate, minute.

2. RIVINA, Plum.

Calyx remotely 3-bracted, 4-parted, colored. Stamens 4 – 8 : anthers ovate or oblong. Ovary simple. Ovule solitary, amphitropous. Stigma capitate or many-cleft. Berry nearly globose, at length dry. Embryo forming a ring around the copious albumen. Cotyledons somewhat leafy, convolute. — Shrubs, with alternate minutely stipulate petioled leaves, and small white or rose-colored flowers in axillary and terminal racemes. Bracts deciduous.

1. **R. humilis,** L. Closely pubescent; stem with spreading branches; leaves oblong-ovate, rounded at the base, tapering but obtuse at the summit, on long filiform petioles; racemes slender, longer than the leaves; calyx-lobes obovate, pale rose-color; berry rounded, compressed. — South Florida. — Shrub 1° – 2° high. Leaves 1′ – 3′ long. Flowers and berries 1″ – 1½″ long.

3. PHYTOLACCA, Tourn. Pokeweed.

Calyx 3-bracted, 5-parted; the lobes petal-like, rounded. Stamens 5 – 25, the filaments subulate: anthers elliptical. Ovary compound. Styles 5 – 12, short, distinct, recurved at the apex, stigmatic within. Fruit a depressed globose berry, containing 5 – 12 one-seeded indehiscent carpels united in a circle. Embryo forming a ring around the central albumen. Cotyledons linear. — Erect branching herbs, with entire petioled leaves. Flowers in racemes opposite the leaves.

1. **P. decandra,** L. Smooth; stem very stout (2° – 12° high); leaves ovate-lanceolate, acute; racemes many-flowered, as long as the leaves; flowers white, turning purplish; stamens, styles, and carpels 10. — Margins of fields and uncultivated ground, Florida, and northward. July – Sept. ♃ — Root large. Berry black.

Order 108. CHENOPODIACEÆ. (Goosefoot Family.)

Unsightly herbs, with exstipulate leaves, inconspicuous flowers, and the characters mostly of the preceding family; but the green calyx often becoming succulent in fruit, 5 (rarely 1 – 2) stamens opposite the sepals, a solitary ovary forming an achenium or utricle in fruit, two short and spreading styles, a horizontal or vertical lenticular seed, and the embryo forming a ring around the albumen, or spirally coiled with little or no albumen.

Synopsis.

TRIBE I. **CYCLOLOBEÆ.** — Embryo curved like a ring around the albumen.

1. CHENOPODIUM. Calyx 3 - 5-parted, the lobes commonly keeled in fruit. Seed horizontal, rarely vertical.
2. ATRIPLEX. Flowers monœcious. Calyx of the sterile flowers 5-parted, of the fertile flower none. Ovary enclosed in a pair of separate at length coriaceous bracts. Radicle inferior.
3. OBIONE. Bracts of the fertile flower united. Radicle superior.
4. SALICORNIA. Flowers 3 together, lodged in excavations of the thickened joints of the leafless stem.

TRIBE II. **SPIROLOBEÆ.** — Embryo spirally coiled, with little or no albumen. Seed horizontal.

5. CHENOPODINA. Calyx 5-parted, not keeled. Leaves terete, fleshy.
6. SALSOLA. Calyx at length transversely winged. Leaves spiny.

1. CHENOPODIUM, L. PIGWEED. GOOSEFOOT.

Calyx 5- (rarely 3 - 4-) parted, bractless, the lobes mostly keeled. Stamens 5, the filaments filiform. Styles 2 - 3, distinct, or united at the base. Utricle depressed, enclosed in the globose or 5-angled calyx. Seed horizontal (rarely vertical), lenticular. Embryo forming a more or less perfect ring around the copious mealy albumen. — Glandular or powdery-coated herbs, with alternate leaves, and clusters of small greenish flowers disposed in panicled spikes.

* *Annuals.*

1. **C. Boscianum,** Moq. Stem erect, with angular branches; leaves small, spreading, lanceolate-linear, very acute, entire, or the lower ones somewhat toothed, more or less mealy and whitened beneath; spikes loose, leafy; seed acute on the margins, slightly roughened, shining, enclosed in the acute-angled calyx. — Carolina, *Bosc.* — Stem slender, 2° high. Leaves 5″ - 12″ long, on petioles 2″ - 3″ long. Calyx-lobes elliptical-ovate, acutish.

2. **C. album,** L. Stem erect, branched, slightly furrowed; leaves ascending, rhombic-ovate, acute at the base, toothed; the upper ones lanceolate and entire, more or less coated with a white powder; spikes panicled; the small clusters scattered or crowded, nearly leafless; seed enclosed in the 5-angled calyx, acute on the margins, smooth and shining. — Varies (C. viride, *L.*) with nearly entire and less mealy leaves, and the larger clusters more scattered. — Cultivated grounds, Florida, and northward. July - Sept. — Stem 2° - 6° high. Petioles long and slender.

3. **C. murale,** L. Stem ascending, branched; leaves long-petioled, ovate-rhombic, acute, unequally and sharply toothed, bright green on both sides; spikes slender, spreading, corymbose, scarcely exceeding the leaves; seed not shining, acute on the margins, nearly enclosed in the slightly angled calyx. — Waste places, Florida, and northward. — Stem 6′ - 18′ high.

4. **C. Botrys,** L. Stem erect, branched; leaves oblong, somewhat pinnatifid-lobed, with the lobes obtuse and glandular-pubescent, the upper ones minute; racemes numerous, axillary, spreading, cymose; seeds with rounded

margins, not wholly included in the open and even calyx. — Waste places, Columbia, South Carolina, *Elliott*, and northward. — Stem 6′ – 12′ high.

* * *Perennial.*

5. **C. Anthelminticum,** L. (WORM-SEED.) Stem stout, erect, branching; leaves oblong or lanceolate, acute at each end, sharply toothed; flowers in narrow panicles terminating the branches; seeds with obtuse margins, smooth and shining, included in the even calyx. — Waste grounds, Florida, and northward. — Stem 2° – 3° high.

2. ATRIPLEX, L. ORACHE.

Flowers monœcious or dicœcious, either similar to those of Chenopodium, or the fertile flower destitute of a calyx, and enclosed in two ovate or rhombic separate or partially united bracts. Seed vertical, lenticular. Embryo forming a ring around the copious mealy albumen. Radicle inferior. — Herbs, commonly coated with scurfy or silvery scales. Leaves alternate or opposite, oftener hastate or angled. Flowers in dense spikes.

1. **A. hastata,** L. Stem angled, diffusely branched; leaves petioled, commonly nearly opposite, hastate or triangular, somewhat toothed, and, like the branches, more or less scurfy; fruiting bracts triangular-ovate or rhomboidal, entire or toothed below, smooth or muricate within. (A. patula, *Ell.*) — Seashore, South Carolina, *Elliott*, and northward. June – Sept. — Stems 1° – 2° long.

3. OBIONE, Gærtn.

Chiefly as Atriplex, both in character and habit; but the two indurated bracts more or less united, often toothed on the edges and crested on the sides, and the radicle superior.

1. **O. arenaria,** Moquin Plant coated with silvery scales; stem branching from the base, ascending; lowest leaves opposite, obovate, entire, tapering into a petiole, the others alternate, nearly sessile, lanceolate or oblong, acute, wavy and slightly toothed; sterile flowers in close terminal spikes; the fertile ones in axillary clusters; bracts 3-toothed at the summit, and with two mostly toothed knobs at the sides. (Atriplex arenaria, *Nutt.*) — Drifting sands along the coast, Florida, and northward. July – Sept. ① — Stem 1° – 2° high. Leaves 1′ – 1½′ long.

2. **O. cristata,** Moquin. Plant scurfy, green; stems diffusely branched; leaves oblong, mucronate, petioled, denticulate, green above, paler beneath; bracts roundish, acute, somewhat spiny-toothed on the margins, and with 2 – 4 roundish knobs at the sides. — Sandy shores, South Florida. — Stem 1° – 1½° high. Leaves ½′ – 1′ long. Flowers clustered.

4. SALICORNIA, Tourn. SAMPHIRE.

Flowers perfect, lodged in excavations of the thickened upper joints of the stem, spiked; calyx thin, with a denticulate border, at length spongy, and sur-

rounded at the apex by a circular wing. Stamens 1 – 2. Styles united below. Utricle included in the calyx. Embryo coiled, or bent into a ring. — Smooth and succulent saline plants, with jointed leafless stems. Flowers three together; the lateral ones sometimes sterile, minute.

1. **S. herbacea,** L. Annual; stem erect, much branched; the joints thickened upward, obtusely 2-toothed at the apex; spikes long, tapering to the summit. — Salt marshes along the coast, Georgia, and northward. August. — Stem 6′ – 12′ high.

2. **S. ambigua,** Michx. Stem shrubby, prostrate or creeping; the branches herbaceous, erect; joints truncate, dilated upward, slightly 2-toothed; spikes cylindrical, obtuse, the uppermost approximate, sessile, the lateral ones pedunculed. — Sandy marshes along the coast, Florida, and northward. Aug. — Stem 2° – 3° long, the branches 4′ – 6′ high.

5. CHENOPODINA, Moquin.

Flowers perfect, bracted. Calyx 5-parted, fleshy, inflated and berry-like in fruit. Stamens 5. Stigmas 2 – 3, spreading. Utricle depressed, enclosed in the calyx. Seed horizontal, lenticular. Embryo flat-spiral, dividing the scanty albumen into 2 portions. — Smooth saline plants, with fleshy terete alternate leaves, and axillary clustered flowers.

1. **C. maritima,** Moquin. Annual; stem diffusely much branched; leaves linear, acute; calyx-lobes obtuse, keeled; stamens exserted. — Low sandy places along the coast, Florida, and northward. Sept. — Stem 1° – 3° high. Leaves 1′ – 2′ long. Flowers minute.

6. SALSOLA, L. Saltwort.

Flowers perfect, 2-bracted. Calyx 5-parted, the lobes at length transversely winged. Stamens 5, slightly united at the base. Style slender: stigmas 2. Utricle flattened at the apex, enclosed in the persistent calyx. Embryo conical-spiral. Albumen none. — Saline plants, with alternate and fleshy leaves, and axillary flowers.

1. **S. Kali,** L. Smooth; stem spreading, ascending; leaves subulate, spine-pointed, like the ovate bracts; flowers solitary; calyx-lobes connivent, with the dilated, membranaceous wing rose-colored. (S. Caroliniana, *Walt.*) — Sandy shores, Georgia, and northward. Aug. ⓘ — Stem 1° – 1½° high.

Order 109. AMARANTACEÆ. (Amaranth Family.)

Chiefly herbs, with simple exstipulate leaves, and inconspicuous scarious-bracted flowers, which are commonly crowded in spikes or heads. — Sepals 3 – 5, free, or united at the base, scarious, imbricated in the bud. Stamens 3 – 5, hypogynous, opposite the sepals, free, or united below, often with

sterile filaments interposed: anthers 1 – 2-celled, introrse. Ovary single, ovate, compressed, 1 – many-ovuled. Stigmas 1 – 3. Utricle closed or circumscissile. Embryo coiled into a ring around the central albumen.

Synopsis.

TRIBE I. **CELOSIEÆ.** Anthers 2-celled. Ovary many-ovuled.

1. CELOSIA. Stamens united at the base. Utricle circumscissile.

TRIBE II. **ACHYRANTHEÆ.** Anthers 2-celled. Ovary 1-ovuled. — Leaves alternate. Stamens free. Sterile filaments none.

* Utricle circumscissile.

2. AMARANTUS. Flowers monœcious. Sepals 3 – 5.

* * Utricle indehiscent.

3. EUXOLUS. Flowers all alike, monœcious, sessile. Sepals 3 – 5.
4. AMBLOGYNA. Flowers monœcious. Calyx of the staminate flower 3-sepalous, of the pistillate flower 5-parted, funnel-shaped.
5. SCLEROPUS. Flowers monœcious. Sepals 5. Stamens 3. Fruiting pedicels indurated and deciduous with the fruit.
6. ACNIDA. Flowers dicœcious. Sepals of the staminate flower 5, of the pistillate none. Stamens 5.

TRIBE III. **GOMPHRENEÆ.** Anthers 1-celled. Ovary 1-ovuled. Leaves opposite. Stamens united below.

7. IRESINE. Calyx 5-sepalous. Stamens united into a short cup. Sterile filaments none.
8. ALTERNANTHERA. Calyx 5-sepalous. Stamens united into a cup. Sterile filaments minute, tooth-like.
9. TELANTHERA. Calyx 5-sepalous. Stamens united into a tube. Sterile filaments cleft or fimbriate at the apex.
10. FRŒLICHIA. Calyx 5-cleft. Stamens wholly united. Anthers sessile. Sterile filaments entire.

1. CELOSIA, L.

Flowers perfect, 3-bracted. Sepals 5. Stamens 5, united at the base into a cup. Sterile filaments none. Anthers 2-celled. Style short or elongated. Stigmas 2 – 3, recurved. Utricle many-seeded, circumscissile. — Smooth herbs or shrubs, with alternate petioled leaves, and glossy flowers, crowded in axillary and terminal spikes or panicles.

1. **C. paniculata,** L. Stem shrubby, erect; leaves deltoid-ovate, acute, abruptly petioled; spikes cylindrical, simple or branched, mostly shorter than the leaves; sepals oblong, rigid, several times longer than the bracts; stigmas 3; utricle many-seeded. — South Florida, *Dr. Blodgett.* Leaves 2′ long. Seeds minute, lenticular, shining.

2. AMARANTUS, Tourn. AMARANTH.

Flowers polygamo-monœcious, 3-bracted. Sepals 5, rarely 3, smooth, erect. Stamens 5 or 3, free. Sterile filaments none: anthers oblong, 2-celled. Style none: stigmas 2 – 3, slender, spreading. Utricle 1-seeded, ovate, 2 – 3-toothed at the apex, circumscissile, commonly included in the calyx; pericarp mostly membranaceous. Radicle inferior. — Unsightly annual herbs, with erect or dif-

fuse stems, alternate mostly petioled entire mucronate leaves, and greenish or purplish flowers, crowded in axillary and terminal spikes or clusters. Bracts longer than the sepals.

* *Flowers in small axillary clusters: sepals and stamens* 3.

1. **A. albus,** L. Stem erect, branching from the base, smooth; leaves small, long-petioled, oblong-obovate, very obtuse or emarginate, wavy at the margins; clusters shorter than the petioles; sepals awl-pointed, much shorter than the subulate spine-pointed spreading bracts, and half as long as the rugose utricle. — Cultivated grounds, Florida, and northward. May – Sept. — Stem 1° high. Leaves $\frac{1}{2}'$ – 1′ long.

* * *Flowers (green) crowded in terminal and axillary spikes: sepals and stamens* 5: *leaves long-petioled.*

2. **A. chlorostachys,** Willd. Stem erect, furrowed, pubescent; leaves ovate or rhombic-ovate, obtuse, or the upper ones acute, short-mucronate, the veins beneath, like the petiole, pubescent; spikes very numerous, forming a long leafy and more or less dense panicle; sepals lanceolate, acute, scarcely half as long as the subulate bracts, shorter than the rugose utricle. — Cultivated grounds, common. Aug. and Sept. — Stem 2° – 4° high. Leaves 2′ – 4′ long, twice as long as the petiole.

3. **A. hybridus,** L. Smooth or nearly so; stem erect, branching; leaves thin, ovate or ovate-oblong, obtuse, notched, or tapering at the apex, long-mucronate, the pale veins prominent beneath; spikes numerous, panicled, the terminal one elongated, the lower axillary ones short and roundish; sepals oblong, acuminate, rather shorter than the subulate bracts, and equalling the slightly rugose utricle. — Cultivated grounds, Florida, and northward. Aug. and Sept. — Stem 2° – 3° high. Leaves 2′ – 5′ long.

4. **A. spinosus,** L. Smooth; stem stout, succulent, often purplish; leaves ovate or ovate-oblong, obtuse or emarginate, long-petioled, often blotched with purple, spiny in the axils; terminal spike elongated, bending, the lower axillary ones short and roundish; sepals, bracts, and rugose utricle nearly equal. — Fields and waste places, Florida, and northward. July – Oct. — Stem 1° – 3° high.

3. EUXOLUS, Raf.

Characters chiefly of Amarantus; but the somewhat fleshy utricle indehiscent, and the (green) sepals longer than the bracts.

1. **E. lividus,** Moquin. Stem erect, branched, succulent, green, red, or purple; leaves long-petioled, ovate, obtuse or notched at the apex; spikes dense-flowered; the terminal one longest, acute, with several shorter ones crowded near its base, the lowest axillary ones much shorter than the petiole; sepals 3, shorter than the roundish acute rugose utricle, and 3 times as long as the bracts. (Amarantus lividus, *L.*) — South Florida to South Carolina. July – Sept. ⓘ — Stem 1° – 3° high. Leaves, with the petiole, 3′ – 6′ long.

2. **E. pumilus,** Raf. Stem low, somewhat fleshy; leaves small, mostly crowded near the end of the branches, ovate, obtuse, short-petioled; flowers in small axillary clusters; sepals 5, half as long as the ovate obscurely 5-ribbed utricle. (Amarantus pumilus, *Nutt.*) — Sandy sea-shore, South Carolina, and northward Aug. and Sept.

4. AMBLOGYNA, Raf.

Flowers monœcious. Staminate flowers 3-sepalous, triandrous. Pistillate flowers round-funnel-shaped, 5-cleft, with spreading spatulate scarious lobes, enclosing the indehiscent utricle. Otherwise like Amarantus.

1. **A. polygonoides,** Raf. Stem slightly pubescent, slender, branching from the base; leaves small, rhombic-ovate or obovate, obtuse, notched, tapering into a slender petiole; flowers crowded in axillary clusters, shorter than the petiole; bracts subulate; calyx of the pistillate flowers twice as long as the bracts, with a finely ribbed tube, and a spreading white border; utricle ovate, rugose above, 3-cleft at the apex. — South Florida. ① — Stem 1° – 1½° long. Leaves ½′ – 1′ long.

5. SCLEROPUS, Schrad.

Flowers monœcious, 3-bracted, triandrous. Calyx 5-sepalous. Utricle indehiscent. Staminate flowers solitary, sessile in the upper axils. Pistillate flowers clustered in the lower axils, on flattened pedicels which become indurated, and fall away with the mature fruit. Otherwise like Amarantus and Euxolus.

1. **S. crassipes,** Moquin. Smooth; stem erect, branching; leaves obovate, obtuse, notched, tapering into a slender petiole; clusters shorter than the petiole; sepals much longer than the strongly keeled bracts, spatulate, obtuse, enclosing the granular-roughened utricle. — South Florida. ① — Stem 1° – 2° high. Leaves 1′ long.

6. ACNIDA, Mitchell.

Flowers dicœcious, 3-bracted. Calyx of the staminate flower 5-sepalous, of the pistillate flower none. Stamens 5, free. Sterile filaments none: anther-cells united only in the middle. Stigmas 3 – 5, spreading, shorter than the 1-ovuled ovary. Utricle fleshy, 3 – 5-angled, indehiscent. Seed obovate. Radicle inferior. — A smooth marsh annual, with long lanceolate alternate entire leaves, and thin scarious white flowers in axillary and terminal panicles.

1. **A. cannabina,** L. — Marshes and river-banks, Florida, and northward. Aug. and Sept. — Stem stout, branched, 2° – 8° high. Leaves long-petioled, 3′ – 6′ long, obtuse or acuminate. Spikes cylindrical, panicled. Sepals pointed. Bracts of the pistillate flowers subulate.

7. IRESINE, Browne.

Flowers perfect or dicœcious, 3-bracted. Sepals 5. Stamens 5, united into a cup at the base. Sterile filaments none: anthers 1-celled, ovate. Style very

short: stigmas 2–3, slender. Utricle roundish, 1-seeded, indehiscent, included in the calyx. Seed vertical, lenticular. Radicle ascending. — Chiefly herbs, with opposite petioled leaves, and scarious glossy flowers, disposed in single or panicled spikes or heads.

§ 1. PHILOXERUS. *Flowers perfect, crowded in axillary and terminal heads.*

1. **I. vermicularis,** Moquin. Smooth; stem much branched, prostrate or creeping; leaves club-shaped, fleshy, semi-terete; heads mostly sessile, ovate or globose, at length oblong or cylindrical, obtuse; flowers white; sepals obtuse, longer than bracts, the two exterior ones woolly at the base. — Sandy sea-shores, South Florida. — Stems 1°–2° long. Leaves ½′–1′ long. Heads 3″–8″ long, mostly terminal and solitary.

§ 2. IRESINASTRUM. *Flowers diœcious, disposed in loosely-panicled spikes.*

2. **I. diffusa,** H. & B. Stem erect, somewhat 5-angled, smooth; leaves petioled, ovate, acuminate, slightly denticulate-ciliate on the margin, smooth; panicle narrowly pyramidal, much branched; spikelets ovate, obtuse, straw-color; sepals 3-nerved, smooth, acute, twice as long as the ovate bracts; rachis slightly pubescent. (I. celosioides, *Ell.* ?) In Florida, *Michaux.* Saline marshes, South Carolina, *Elliott.* — Stem 2°–3° high. Leaves 1½′–2′ long, the upper ones lanceolate. Branches of the panicle alternate.

8. ALTERNANTHERA, Mart.

Flowers perfect or diœcious, 3-bracted. Sepals 5, smooth or villous. Stamens 5, united into a short cup at the base. Sterile filaments minute, tooth-like: anthers 1-celled. Style short: stigma capitate or 2-lobed. Utricle indehiscent, 1-seeded. Seed vertical, lenticular. Radicle ascending. — Herbs. Leaves opposite.

* *Flowers diœcious: heads or spikes loosely panicled: stigma 2-lobed.*

1. **A. flavescens,** Moquin. Stem erect, smooth, furrowed, simple or sparingly branched; leaves ovate-lanceolate, acute or acuminate at each end, roughish with short scattered hairs, short-petioled; panicle oblong, the branches alternate, nearly leafless; spikes oblong, lengthening, straw-color; sepals of the staminate flowers oblong, acute, nerveless, smooth, twice as long as the ovate persistent bracts; those of the pistillate flowers ovate, 3-nerved nearly to the apex; the pedicels clothed with long white wool. — Margins of fields, Middle Florida. July–Sept. ① — Stem 2°–3° high. Leaves 2′–4′ long, the uppermost alternate and lanceolate. Panicle 8′–12′ long. Sterile filaments tooth-like, minute.

* * *Flowers perfect: heads mostly axillary, solitary or clustered: stigma capitate: stems prostrate.*

2. **A. Achyrantha,** R. Br. Stems forking, pubescent; leaves smoothish, oval or obovate, narrowed into a petiole; heads dense, oval, white; sepals lanceolate, spine-pointed, woolly with barbed hairs on the back, the two inner ones much smaller; sterile filaments subulate from a dilated and obscurely denticulate

base, as long as the fertile ones. (Achyranthes repens, *Ell.*) — Along roads and places much trodden, Florida to South Carolina. June – Oct. ♃ — Stems 6′ – 12′ long. Leaves 1′ long.

9. TELANTHERA, R. Brown.

Flowers perfect, 3-bracted. Sepals 5, erect. Stamens 5, united into a tube below the middle. Sterile filaments elongated, flattened, fimbriate at the apex: anthers 1-celled, oblong. Style short: stigma capitate. Utricle indehiscent, 1-seeded, included in the calyx. Seed vertical. Radicle ascending. — Herbs or shrubs, with opposite leaves. Flowers capitate.

* *Calyx sessile, the 3 exterior sepals longer: heads sessile or nearly so.*

1. **T. polygonoides,** Moquin. Stem erect or prostrate, pubescent; leaves oblong-obovate, hairy; heads sessile, roundish, single or 2 – 3 together, axillary and terminal; sepals thin, ovate-lanceolate, twice as long as the bracts, the outer ones 3-nerved, woolly at the base; sterile filaments as long as the fertile ones, 3 – 4-cleft at the apex. — On the coast of South Carolina, *Moquin.*

2. **T. maritima,** Moquin. Smooth and fleshy; stem prostrate, branching, angled; leaves wedge-obovate, very obtuse, mucronate; heads roundish or oblong, axillary and terminal, dull straw-color, rigid; flowers crowded, 3-angled; sepals smooth, rigid, ovate, acuminate, 5-ribbed, with the margins membranaceous, one third longer than the ovate keeled bracts; sterile filaments longer than the fertile ones, 4 – 6-cleft at the apex. — South Florida. — Leaves 1′ – 2′ long. Heads 4″ – 6″ long.

* * *Calyx raised on a short 5-angled pedicel; the sepals nearly equal, cylindrical, hairy: heads long-peduncled.*

3. **T. Floridana,** n. sp. Shrubby; stem slender, elongated, forking, remotely jointed; the young branches and leaves roughened with appressed scattered hairs; leaves distant, fleshy, oblong-lanceolate or obovate, acute or acuminate, tapering into a short petiole; peduncles terminal and in the forks, 4 – 6 times as long as the leaves; heads white, ovate; sepals lanceolate-oblong, acute, 3 – 5-nerved, hairy, 2 – 3 times as long as the ovate acute bracts; sterile filaments longer than the fertile ones, 5 – 6-cleft; utricle crowned with a narrow toothed margin. — South Florida, along the coast. — Stem 2° – 4° long Leaves 1′ long.

4. **T. Brasiliana,** Moquin. Herbaceous, rough-hairy; the young leaves and branchlets hoary; stem erect, forking; leaves thin, ovate-lanceolate, acuminate, tapering into a short petiole, longer than the internodes, rather shorter than the slender peduncles; heads and flowers as in No. 3; utricle crowned with a narrow entire margin. — South Florida. — Stem apparently tall. Leaves 2′ – 4′ long.

10. FRŒLICHIA, Mœnch.

Flowers perfect, 3-bracted. Calyx tubular, 5-cleft, indurated and spiny-crested in fruit. Stamens 5, united into a long tube. Sterile filaments entire anthers

sessile. Stigma capitate or many-cleft. Utricle indehiscent, 1-seeded, included in the calyx. Seed vertical. Radicle ascending. — Woolly or hairy annuals. Leaves opposite. Spikes opposite, and terminating the naked peduncle-like summit of the stem.

1. **F. Floridana,** Moquin. White-tomentose or woolly; stem erect, simple or branched; leaves varying from linear to oblong; spikes ovate or oblong, lengthening with age; bracts mostly blackish, shorter than the woolly calyx; style short; stigma capitate; fruiting calyx round-ovate, compressed, toothed along the margins, and minutely tubercled at the base. (Oplotheca Floridana, *Nutt.*) — Dry sandy places, Georgia, Florida, and westward. July – Sept. — Stem $\frac{1}{2}$° – 3° high. Spikes solitary, few, or numerous.

Order 110. POLYGONACEÆ. (Buckwheat Family.)

Herbs, shrubs, or (tropical) trees, with simple mostly alternate and stipulate leaves, and perfect or diœcious flowers. — Calyx 3 – 6-cleft, or 3 – 6-sepalous, persistent. Stamens 4 – 12, inserted on the base of the calyx: anthers 2-celled. Ovary single, 1-celled, with the solitary orthotropous ovule erect from the base of the cell. Styles 2 – 3, distinct or partly united. Fruit (achenium) lenticular or 3-angled, rarely ovoid. Embryo mostly on the outside of mealy albumen. Radicle pointing upward. — Stipules sheathing, annular, or wanting.

Synopsis.

Suborder I. POLYGONEÆ. Involucre none. Calyx 5-cleft or 5-sepalous. Stamens 4 – 9 (mostly 5 – 8). Ovules sessile. Embryo curved on the outside of the albumen, rarely straight in its centre. Stipules sheathing.

* Calyx 5-sepalous, the inner sepals erect, mostly enlarged in fruit.

1. RUMEX. Calyx green, often grain-bearing. Stigmas many-cleft.
2. POLYGONELLA. Calyx corolla-like. Stigma entire.

* * Calyx 5-sepalous, the sepals all erect, unchanged in fruit, free from the achenium.

3. POLYGONUM. Sepals entire. Embryo curved on the outside of the albumen.
4. THYSANELLA. Inner sepals fimbriate. Embryo straight at the side of the albumen.

* * * Calyx 5-parted, the tube enlarged and fleshy in fruit, and partly united with the achenium.

5. COCCOLOBA. Achenium ovoid or globose. Trees.

Suborder II. BRUNNICHIEÆ. Involucre none. Calyx 5-parted, the tube enlarged and indurated in fruit. Stamens 8. Ovule borne on a slender stalk. Embryo at the margin of the albumen. Stipules none.

6 BRUNNICHIA. Pedicels winged in fruit. Climbing shrubs.

SUBORDER III. ERIOGONEÆ. Flowers surrounded by an involucre. Calyx 6-parted. Stamens 9. Ovule sessile. Embryo included in scarce albumen. Stipules none.

7. ERIOGONUM. Involucre 5-toothed. Woolly or silky herbs.

1. RUMEX, L. DOCK.

Flowers perfect or dicœcious. Calyx herbaceous, 6-parted, the 3 outer lobes spreading or recurved, the inner ones (valves) mostly enlarged in fruit, and enclosing the 3-angled achenium, often bearing grain-like prominences on the outside. Stamens 6; anthers erect. Styles 3: stigmas many-cleft. Achenium 3-angled. Embryo curved on the outside of the albumen. — Herbs, with alternate leaves, smooth truncated sheaths, and small green flowers in racemed or panicled clusters.

* *Flowers perfect or polygamous.*

+ *Valves entire.*

1. **R. crispus,** L. Smooth; leaves lanceolate, wavy-crisped, acute at both ends, or the lowest truncate or slightly cordate at the base, and long petioled, the uppermost linear; panicle leafy at the base; whorls crowded in fruit; valves broadly cordate, obtuse, one or all grain-bearing. — Waste ground around dwellings, Florida, and northward. June and July. ♃ — Stem 2°–3° high. Lowest leaves 1° long.

2. **R. verticillatus,** L. Smooth; lowest leaves oblong, obtuse or cordate at the base, flat, the others lanceolate, acute at each end; panicle naked, loose-flowered; pedicels slender, thickened upward, reflexed in fruit; valves ovate, obtuse, rugose-veined, each bearing a large grain, which is half as wide as the valve. (R. Britannicus, *Ell.*) — Swamps and ditches, Florida, and northward. May and June. ♃ — Stem 1°–2° high. Lowest leaves 1°–1½° long.

3. **R. Floridanus,** Meisner. Smooth; stem stout, branching; leaves lanceolate, acute at each end; panicle naked, dense-flowered; pedicels about twice as long as the valves, thickened upward, reflexed in fruit; valves deltoid-ovate, obtusely pointed, each bearing a narrow grain, which is much narrower than the reticulate valve. — Deep river-swamps, West and South Florida. June. ♃ — Stem 2°–3° high. Leaves ½°–1½° long.

4. **R. sanguineus,** L. Lowest leaves oblong, cordate, acute or obtuse, the upper lanceolate, acute, obtuse or cordate at the base, wavy-margined; panicle leafless; lower whorls distant; pedicels very short; valves oblong, longer than the pedicel, one only prominently grain-bearing. — Around Charleston, *Elliott.* New Berne, *Croom.* Introduced. June and July. ♃ — Stem 2°–3° high. Lowest leaves large, variegated with red veins.

+ + *Valves toothed or bristly on the margins.*

5. **R. obtusifolius,** L. Stem roughish; lowest leaves large, ovate-oblong, cordate, mostly obtuse, the middle ones oblong, the uppermost lanceolate, acute at each end; panicle large, leafy below; lowest whorls scattered, the upper somewhat crowded; valves triangular-ovate, toothed near the base, nearly as

long as the slender recurved pedicels, one or all more or less prominently grain-bearing. (R. divaricatus, *Ell.*) — Waste ground, around dwellings. Introduced. June – Aug. ♃ — Stem 2° – 3° high. Lowest leaves 1° – 1½° long, 6′ – 9′ wide, slightly crenate, and wavy on the margins.

6. **R. pulcher,** L. Branches rigid, spreading; lowest leaves cordate-oblong, somewhat fiddle-shaped, the upper lanceolate, acute; whorls remote; valves longer than the thick pedicels, ovate-oblong, rigid, strongly toothed, more or less prominently grain-bearing. — Around Charleston, *Elliott.* Introduced. June and July.

7. **R. maritimus,** L. Pubescent; stem low, diffusely branched; leaves lanceolate, wavy-margined, the lower ones somewhat cordate or hastate at the base, the upper linear; whorls compactly crowded in leafy spikes; valves small, bristly on the margins, nearly covered by the large grain. (R. persicarioides, *L.*) — Sea-shores, North Carolina, and northward. Aug. and Sept. ① — Stems 6′ – 12′ high. Spikes yellowish.

* * *Flowers diœcious. Herbs with sour juice.*

+ *Calyx not enlarged in fruit.*

8. **R. Acetosella,** L. Root creeping; stems low, erect or ascending; leaves oblong, lanceolate, or linear, entire or hastate-lobed; panicle slender, leafless; whorls scattered, few-flowered; valves ovate, grainless, appressed to the achenium. — Old fields and sterile soil, common. June and July. ♃ — Stems 6′ – 12′ long. Leaves and flowers small.

+ + *Inner calyx-lobes dilated in fruit.*

9. **R. hastatulus,** Baldw. Stems clustered, erect; leaves glaucous, lanceolate or linear, or the lowest oblong, entire or hastate-lobed; whorls few-flowered, scattered, or the upper ones crowded; valves round-cordate, entire, membranaceous, reticulated, red or white, grainless. — Dry sands, along the coast and in the middle districts, Florida to South Carolina. May and June. — Stem 1° – 1½° high. Leaves 1′ – 2′ long, the upper ones mostly entire.

2. POLYGONELLA, Michx.

Flowers perfect or diœciously polygamous. Calyx corolla-like, deeply 5-parted or 5-sepalous; the three inner sepals mostly enlarging and enclosing the 3-angled achenium, glandless. Stamens 8: anthers roundish. Stigmas 3, capitate. Embryo straight, or nearly so, in the centre, or at one side of the mealy albumen. — Smooth and commonly glaucous herbs or shrubs, with slender branching stems, small alternate leaves, and small flowers in spiked racemes. — Sheaths smooth. Bracts imbricated, top-shaped, mostly 1-flowered. Pedicels nodding in fruit.

§ 1. EUPOLYGONELLA. *Filaments all alike, subulate: stigmas nearly sessile: Flowers diœciously polygamous: embryo in the centre of the albumen.*

1. **P. parvifolia,** Michx. Shrubby and diffusely branched at the base; leaves wedge-shaped or linear-spatulate, vertical; those on the sterile shoots imbricated; sheaths obliquely truncate, pointless; racemes short, very numerous, somewhat crowded in an oblong or corymbose panicle; bracts truncate; flowers

white, yellowish, or rose-color; exterior sepals recurved; valves orbicular, equal, longer than the ovate achenium. — Dry sandy soil, near the coast, Florida to North Carolina. Aug. and Sept. — Stem 1° – 2° high. Leaves ½′ – 1′ long. Racemes ½′ – 1′ long.

2. **P. gracilis,** Meisner. Annual; stem tall and slender, paniculately branched above; leaves remote, wedge-oblong, obtuse, often wanting; sheaths truncate, pointless: racemes slender, scattered, forming a large and spreading panicle on the sterile plant, more crowded on the fertile; bracts truncate; flowers white or pale rose-color, the fertile ones greenish; sepals all erect; valves oval or elliptical, unequal (the interior longer), shorter than the ovate-lanceolate acuminate achenium. (Polygonum gracile, *Nutt.*) — Dry sand ridges in the pine barrens, Florida to South Carolina. Sept. and Oct. — Stem 2° – 5° high. Leaves 1′ long. Racemes linear, 1′ – 3′ long.

3. **P. brachystachya,** Meisner. Shrubby; branches slender; leaves linear, tapering from the obtuse apex to the base; sheaths obliquely truncate, somewhat pointed; panicle compound, leafy; racemes short, oblong, nearly sessile; bracts truncate; exterior sepals keeled, reflexed; valves oval, strongly 1-nerved, longer than the rhomboïdal achenium, nearly equal. — South Florida. Branches straight, 1° – 1½° long. Leaves 3″ – 5″ long. Racemes ½′ long.

4. **P. Croomii,** n. sp. Stem shrubby at the base; branches slender; leaves very small, narrowly linear, obtuse, crowded or imbricated on the sterile shoots; sheaths obliquely truncate, subulate-awned; racemes slender, scattered in an open oblong panicle; bracts of the filiform rachis obliquely truncate, pointed; flowers minute, white; exterior sepals recurved; valves unequal, the 2 exterior roundish, the interior oblong, longer than the rhombic-ovate achenium. — In Carolina or Georgia, probably in the middle districts, *Croom.* — Stem apparently 1° – 1½° high. Leaves 2″ – 3″ long. Racemes 3″ – 5″ or the sterile ones at length 9″ long.

5. **P. ciliata,** Meisner. Stem herbaceous, nearly simple; leaves subulate, very acute, sheaths fringed at the throat with a few long bristles; panicle simple, short, leafy at the base; spikes nearly sessile, filiform; bracts minute, pointed; pedicels very short; sepals oblong, obtuse, spreading longer than the achenium. — South Florida, near the Manatee River, *Rugel.* — Stem 2° high, slender. Leaves 1′ – 1½′ long.

§ 2. GONOPYRUM. *Filaments unlike, the 3 interior dilated at the base: styles manifest: flowers perfect: embryo at one side of the albumen.*

6. **P. Meisneriana,** Shuttl. Stem shrubby, much branched; leaves minute, filiform, obtuse; sheaths truncate, pointless; racemes long, forming small panicles at the end of the branches; bracts loose, oblique, with the points spreading; exterior sepals recurved; valves equal, roundish, often emarginate, longer than the ovate acuminate achenium; three interior filaments inversely sagittate below the middle. — Alabama, *Rugel*, and near Macon, Georgia. — Stem 1° – 2° high, with filiform branchlets. Leaves numerous, 2″ – 3″ long. Fruiting spikes rigid, 1′ – 2′ long. Valves largest of all.

7. **P. articulata,** Meisner. Annual; stem much branched, slender; leaves narrowly linear, obtuse, deciduous; sheaths truncate, pointless; racemes numerous, erect, slender; bracts truncate, open, the lowest ones pointed; flowers bright rose-color; sepals oval or roundish, nearly equal, unchanged in fruit; interior filaments rhombic-ovate at the base. (Polygonum articulatum, *L.*) — Dry sandy soil, Georgia, and northward. Aug. — Stem 6′ – 12′ high. Leaves 4′ – 8′ long. Racemes 1′ – 3′ long.

3. POLYGONUM, L. Knotweed.

Flowers perfect. Calyx 5- (rarely 4-) parted, corolla-like, the lobes nearly equal, erect and unchanged in fruit. Stamens 3 – 9 : anthers roundish. Styles 2 – 3, distinct or partly united : stigmas entire. Achenium 3-angled or lenticular, enclosed in the persistent calyx. Embryo curved on the outside of the albumen. Radicle slender. — Herbs, with alternate, simple leaves, and sheathing stipules. Flowers commonly white or rose-color, variously disposed.

§ 1. Amblygonon. *Flowers in closely-bracted spikes : stamens* 7 : *style* 2-*cleft : achenium lenticular : cotyledons incumbent : albumen mealy.*

1. **P. orientale,** L. Hairy; stem tall, branching; leaves ovate, acuminate, petioled; sheaths loose, salver-form; spikes panicled, cylindrical, dense, nodding; bracts ovate; flowers large, bright rose-color. — Around dwellings, escaped from cultivation. June – Sept. — Stem 3° – 5° high. Spikes 2′ – 3′ long.

§ 2. Persicaria. *Flowers in closely-bracted spikes : stamens* 4 – 8 : *styles* 2 – 3, *or* 2 – 3-*cleft : achenium* 3-*angled or lenticular : cotyledons accumbent : albumen horny : sheaths cylindrical, truncate.*

* *Sheaths naked : style* 2-*cleft or* 2-*parted : achenium lenticular.*

2. **P. incarnatum,** Ell. Stem smooth below, the summit of the branches, peduncles, and calyx sprinkled with glandular dots; leaves lanceolate, long-acuminate, petioled, rough on the margins and veins; sheaths slender, appressed; spikes racemed, linear, nodding; bracts spreading, acute, longer than the pedicels; flowers small, flesh-color. Stamens 6; style 2-parted; achenium ovate, with the sides concave. — Ponds, ditches, &c., South Carolina, and westward. July – Oct. ① — Stem 2° – 3° high. Leaves 6′ – 8′ long. Spikes 1′ – 2′ long.

3. **P. densiflorum,** Meisner. Stem stout, smooth, tumid at the joints, branching above; leaves lanceolate or oblong-lanceolate, tapering at the summit, but rather obtuse, rough on the margins and veins; spikes racemed or somewhat panicled, linear, erect, dense-flowered, the peduncles minutely glandular; bracts obliquely truncate, obtuse, shorter than the pedicels; stamens mostly 6; style 2-cleft; achenium round-ovate, black and shining, with the sides convex — Muddy banks, Florida, and westward. Sept. and Oct. ① — Stem 3° – 4° high. Leaves 6′ – 10′ long. Spikes 2′ – 4′ long. Flowers white.

4. **P. Pennsylvanicum,** L. Stem smooth below, the branches and peduncles roughened with short glandular hairs; leaves short-petioled, lanceolate,

rough on the margins and veins; spikes erect, oblong, obtuse, close-flowered; flowers rose-color; stamens mostly 8, exserted; style 2-cleft; achenium orbicular, with the sides concave. — Wet places, Georgia, and northward. July – Sept. ① — Stem 1° – 3° high, sometimes nearly smooth. Leaves 2′ – 4′ long. Spikes 1′ – 1½′ long. Flowers much larger than those of the two preceding species.

* * *Sheaths fringed with bristly hairs: achenium 3-angled, or (in No. 5) sometimes lenticular: stamens mostly* 8.

5. **P. Persicaria,** L. Stem smooth, branching from the base, erect or diffuse; leaves lanceolate or oblong, obtuse or acutish, the margins and veins roughened; sheaths short, nearly smooth, fringed with a few short bristles; spikes short, oblong, obtuse, dense-flowered; flowers rose-color; stamens 6 – 7; style half 2-cleft; achenium lenticular or 3-angled, smooth and shining. — Low places around dwellings and along roads, Florida, and northward. Introduced. July. ① — Stem 1° – 1½° high. Leaves 2′ – 4′ long, often with a dark triangular spot in the middle. Spikes ½′ – 1′ long.

6. **P. acre,** Kunth. Stem slender, smooth, creeping at the base; leaves lanceolate, rough on the margins and veins, and, like the white calyx, dotted with pellucid glands; sheaths smoothish, long-fringed at the throat; spikes 1 – 3, filiform, loose-flowered; stamens 8; style 3-parted; achenium 3-angled. (P. punctatum, *Ell.*) — Ditches and margins of ponds, Florida, and northward. July – Sept. ↳ — Stem 1° – 3° long. Leaves 2′ – 4′ long, very acrid. Spikes 2′ – 3′ long.

7. **P. hydropiperoides,** Michx. Stem slender, smooth, ascending from a floating or creeping base; leaves linear or lanceolate, roughened with short rigid hairs on both sides, or only on the margins and veins; sheaths hispid, long-fringed; spikes 2 – 3, linear, rather close-flowered; calyx pale rose-color, and, like the leaves, glandless; stamens 8; style 3-cleft; achenium 3-angled. (P. mite, *Pers.*) — Ditches and muddy banks, Florida, and northward. July – Sept. ↳ — Stem 2° – 3° long. Leaves 2′ – 4′ long, not acrid. Spikes 1′ – 2′ long.

8. **P. setaceum,** Baldw. Stem erect, sparingly branched, smooth below, the upper portion, like the peduncles and lanceolate glandless leaves, rough with appressed hairs; stipules appressed-hirsute, copiously fringed with long bristles; spikes filiform, by pairs, loose-flowered; flowers white, glandless; stamens 8; style 3-cleft; achenium 3-angled. — Low ground, Georgia and Florida. July – Sept. ↳ — Stem 2° – 3° high. Leaves 3′ – 5′ long. Spikes 1′ – 2′ long.

9. **P. hirsutum,** Walt. Stem erect, densely hirsute with spreading fulvous hairs; leaves lanceolate, nearly sessile, rounded at the base, hirsute, particularly on the veins and margins; sheaths hirsute, copiously fringed; spikes 2 – 3, linear, erect, rather close-flowered; peduncles smooth above; bracts naked; flowers white, glandless; stamens 8; achenium 3-angled. — Pine-barren ponds, Florida to North Carolina. July – Sept. ↳ — Stem 2° – 3° high. Leaves 2′ – 3′ long. Spikes 1′ long.

§ 3. AVICULARIA. *Flowers axillary, single or* 2 – 3 *together: stamens* 8, *rarely fewer: stigmas* 3, *nearly sessile: achenium* 3-*angled: cotyledons incumbent: albumen horny: sheaths scarious,* 2 – 3-*parted, lacerated: leaves small.*

10. **P. aviculare,** L. Stem prostrate, diffuse, short-jointed; leaves sessile ($\frac{1}{2}'$ long), oblong-linear or lanceolate, obtuse, longer than the 3-cleft sheaths; flowers clustered, nearly sessile, greenish-white, longer than the dull achenium; stamens mostly 5. — Waste places and along roads, common. — Var. ERECTUM. (P. erectum, *L.*) Stem stouter, erect or ascending, leaves larger ($1' - 1\frac{1}{2}'$ long), oblong. — With the preceding. — Var. LITTORALE. (P. maritimum, *L.* P. glaucum, *Nutt.*) Stem long (1° – 2°), prostrate, rigid, short-jointed; leaves small ($4'' - 6''$), oblong-linear, glaucous; the uppermost imbricated and scarcely longer than the more conspicuous silvery sheaths; calyx reddish-white, shorter than the smooth achenium. — Sea-coast sands, Georgia, and northward.

11. **P. tenue,** Michx. Smooth; stem erect, branched, sharply angled, slender; leaves scattered, linear, acute; sheaths small, fringed; flowers mostly solitary, greenish-white; achenium smooth and shining. — Dry rocks in the upper districts. July – Sept. ① — Stem $6' - 8'$ high. Leaves $6'' - 12''$ long.

§ 4. TOVARIA. *Flowers scattered in a long and slender spike: calyx* 4-*parted: stamens* 5, *included: styles* 2, *exserted, persistent: achenium lenticular: cotyledons accumbent.*

12. **P. Virginianum,** L. Stem erect, smooth below; the upper portion, like the leaves and spikes, more or less hairy; leaves large, ovate or ovate-lanceolate, acute at each end; sheaths cylindrical, hairy, fringed; flowers greenish, curved; styles at length hooked at the apex. — Dry rich soil, Florida, and northward. Aug. and Sept. ♃ — Plant 2° – 4° high. Leaves $3' - 5'$ long, $1\frac{1}{2}' - 2\frac{1}{2}'$ wide. Spike $6' - 12'$ long.

§ 5. ECHINOCAULON. *Flowers in terminal clusters: calyx* 4 – 5-*parted: stamens* 6 *or* 8: *styles* 2 – 3: *achenium lenticular or* 3-*angled: cotyledons accumbent. — Stems weak, branching, armed on the angles, petioles, &c. with recurved prickles.*

13. **P. arifolium,** L. Leaves hastate, acuminate, membranaceous, minutely dotted and hairy, long-petioled, the lobes acute; peduncles rather short, bristly; flowers white, somewhat spiked; stamens 6; styles 2; achenium lenticular. — Rice fields and wet places, South Carolina, and northward. June – Oct. ① — Stems 2° – 3° long. Leaves $3' - 4'$ long. Calyx often 4-parted.

14. **P. sagittatum,** L. Leaves small, sagittate, acute, short-petioled, smooth; peduncles elongated, smooth; flowers white, capitate; stamens 8; styles 3; achenium 3-angled. — Wet places, Florida, and northward. June – Oct. ① — Stem 1° – 3° long. Leaves $1' - 2'$ long.

§ 6. TINIARIA. *Flowers in axillary clusters or racemes: calyx greenish white,* 5-*parted, the outer lobes keeled or winged on the back: stamens* 8: *styles* 3, *very short: achenium* 3-*angled: cotyledons accumbent. — Annuals, with twining stems and cordate leaves.*

15. **P. Convolvulus,** L. Stem roughish, prostrate or twining, or when small erect; leaves long-petioled, sagittate-cordate, acuminate, the lobes acute or

obtuse; sheaths naked; flowers in axillary clusters, or forming long interrupted and leafless racemes; fruiting calyx ovate, minutely puberulent, closely investing the dull black achenium, the outer lobes keeled. — Cultivated ground. Introduced. July – Sept. — Stems 1° – 3° long.

16. **P. cilinode,** Michx. Minutely pubescent; stem twining; leaves ovate, cordate or somewhat hastate at the base, acuminate, petioled; sheaths with a row of reflexed hairs at the base; flowers in loose simple axillary and panicled racemes; fruiting calyx smooth, nearly including the smooth and shining achenium, the outer lobes slightly keeled. — Dry rocks on the mountains of North Carolina, and northward. July – Sept. — Stem 3° – 9° long.

17. **P. dumetorum,** L. Smooth; stem twining; leaves ovate, acuminate, long-petioled, cordate or somewhat sagittate at the base; sheaths naked; flowers in long axillary more or less leafy racemes; fruiting calyx somewhat spatulate, emarginate, much longer than the smooth and shining achenium, the outer lobes winged and decurrent on the pedicel. (P. scandens, *L.*) — Low margins of fields and thickets, Florida, and northward. June – Sept. — Stem 6° – 12° long.

4. THYSANELLA, Gray.

Flowers polygamous. Calyx corolla-like, deeply 5-parted, unchanged in fruit; lobes erect, unequal; the 2 outer ones cordate at the base; the inner ones smaller, pectinate-fimbriate. Stamens 8, the filaments filiform. Styles 3, filiform: stigmas entire, obtuse. Achenium ovate, 3-angled, nearly included in the persistent calyx. Cotyledons on the outside of the albumen. — An erect smooth and branching annual, with long linear acute leaves, truncate cylindrical sheaths, fringed with long bristles, and white or rose-colored flowers in closely bracted spikes.

1. **T. fimbriata,** Gray. (Polygonum fimbriatum, *Ell.*) — Dry pine barrens, Georgia and Florida. Sept. and Oct. — Stem branching above, 2° high. Leaves 1′ – 2′ long. Sheaths smooth, adnate to the leaves, not longer than the fringe, the lower ones imbricated. Spikes 2′ – 3′ long, panicled, erect, the upper ones pistillate, the lower staminate. Bracts pointed with a long and slender awn. Outer calyx-lobes oblong, entire in the staminate flowers, fimbriate, like the inner ones, in the pistillate ones.

5. COCCOLOBA, Jacq.

Flowers perfect. Calyx herbaceous, 5-parted, the tube enlarged and more or less fleshy in fruit. Stamens 8. Filaments subulate. Styles 3: stigmas entire. Achenium nearly globose, included in and partly united with the persistent calyx. Embryo straight in the axis of mealy albumen. — Trees or shrubs, with alternate leaves, truncate sheaths, and small greenish flowers in axillary and terminal racemes.

1. **C. uvifera,** Jacq. (Sea-Grape.) Smooth; leaves short-petioled, coriaceous, orbicular-cordate or reniform; racemes terminal, rigid, erect; pedicels

single; stamens included; achenium ovate, acute. — South Florida, along the coast. — A shrub or small tree, with rigid spreading branches. Leaves 3′ – 5′ wide, very thick. Racemes 6′ long.

2. **C. Floridana,** Meisner. Smooth; leaves petioled, somewhat coriaceous, elliptical, obtuse at each end; racemes slender, terminal and on short lateral branches, recurved; pedicels 2 – 3 together, about the length of the calyx; stamens exserted; achenium ovoid, obtuse. — South Florida. — A small tree. Leaves 2′ – 3′ long. Sheaths loose, brown. Racemes 2′ – 3′ long. Achenium 4″ – 5″ long.

6. BRUNNICHIA, Banks.

Flowers perfect. Calyx bell-shaped, 5-parted, the tube enlarged in fruit and enclosing the free achenium. Stamens 8 or 10. Styles 3, slender: stigmas entire. Ovule borne on a slender cord from the base of the ovary, pendulous. Achenium obtusely 3-angled. Seed 6-furrowed. Embryo in one of the angles of the mealy albumen. — A smooth vine, climbing by terminal tendrils. Leaves ovate or cordate-ovate, petioled, acute, deciduous. Sheaths obsolete. Flowers greenish, in axillary and terminal racemes, on slender pedicels, which become indurated and flattened in fruit.

1. **B. cirrhosa,** Banks. — River-banks, Florida to South Carolina. April and May. — Stem shrubby, 10° – 20° long. Leaves 2′ – 3′ long. Racemes 3′ – 6′ long. Bracts ovate, acuminate, 3 – 5-flowered. Fruiting pedicels curved.

7. ERIOGONUM, Michx.

Flowers perfect or polygamous, surrounded by an involucre. Calyx deeply 6-cleft. Stamens 9. Ovary free, 3-sided. Styles 3: stigmas capitate. Achenium 3-angled or 3-winged. Embryo straight in the axis of the albumen, or more or less curved. — Downy or woolly herbs. Leaves alternate, opposite or whorled. Sheaths none. Inflorescence various.

1. **E. longifolium,** Nutt. Stem erect, tomentose, corymbose above, leafy below; leaves smooth or villous above, white-tomentose beneath, the lowest clustered, oblong-linear, long-tapering at the base, the upper scattered, the uppermost bract-like; involucre stalked, many-flowered, obtusely 5-toothed; calyx herbaceous, equal, woolly without. — Sand ridges, East Florida. ♃ — Stem 2° – 3° high. Lowest leaves 3′ – 5′ long.

2. **E. tomentosum,** Michx. Stem erect, tomentose, corymbose above, leafy throughout; leaves smooth above, white tomentose beneath, the lowest clustered, obovate-oblong, long-petioled, the others in whorls of 3 – 4, elliptical, sessile; involucre sessile, obtusely 5-toothed; calyx white, unequal, woolly without. — Dry pine barrens, Florida to South Carolina. July – Sept. ♃ — Stem 2° – 3° high. Lowest leaves 4′ – 6′ long. Flowers very numerous on one side of the spreading branches.

Order 111. LAURACEÆ. (Laurel Family.)

Aromatic trees or shrubs (except Cassyta), with alternate simple minutely dotted leaves, without stipules, and perfect or polygamous clustered flowers. — Calyx 6 – 9-parted, imbricated in 2 rows. Stamens 6 or more, in 1 – 4 rows: anthers adnate, 2 – 4-celled, opening by lid-like valves. Ovary free, 1-celled, with a solitary anatropous suspended ovule. Style simple, thick: stigma obtuse. Fruit a drupe or berry. Seed without albumen. Embryo large. Radicle superior.

Synopsis.

Tribe I. **LAURINEÆ.** Fruit naked. — Trees or shrubs.

* Flowers perfect. Stamens 12, the 3 inner ones sterile.

1. PERSEA. Anthers 4-celled, 4-valved. Trees with evergreen leaves.

* * Flowers dicœcious. Stamens 9, all fertile.

2. SASSAFRAS. Involucre none. Anthers 4-celled.
3. BENZOIN. Involucre 4-leaved. Anthers 2-celled.
4. TETRANTHERA. Involucre 2 – 4-leaved. Anthers 4-celled.

Tribe II. **CASSYTEÆ.** Fruit enclosed in the fleshy calyx. — Leafless twining parasites.

5. CASSYTA. Flowers perfect. Stamens 9. Anthers 2-celled.

1. PERSEA, Gærtn. Red-Bay.

Flowers perfect. Calyx deeply 6-parted, persistent. Stamens 12, in 4 rows, the inner ones sterile and gland-like. Filaments pubescent, the inner fertile ones biglandular. Anthers 4-celled, those of the two outer rows introrse, of the inner row extrorse. Stigma disk-like. Drupe ovoid. — Trees or shrubs, with evergreen entire petioled leaves, and greenish or white flowers, in axillary peduncled clusters or panicles.

1. **P. Carolinensis,** Nees. Branchlets smoothish; leaves oblong or lanceolate-oblong, smooth and deep green above, glaucous beneath, obscurely veined; flowers silky, in cymose clusters, on peduncles shorter than the petioles; calyx-lobes unequal, persistent; drupe blue. (Laurus Carolinensis, *L.*) — Rich shady woods, Florida to North Carolina. July. — A tree 20° – 40° high. Leaves 2′ – 3′ long.

Var. **palustris.** Shrubby; the branchlets, lower surface of the leaves, and flowers densely tomentose; leaves strongly veined, pale green, varying from oval to lanceolate; peduncles longer than the petioles. — Ponds and pine-barren swamps. July. — Shrub 4° – 10° high. Leaves 3′ – 6′ long. Flowers larger than the preceding form.

2. **P. Catesbyana.** Smooth; leaves lanceolate-oblong, acute or obtuse, reticulate, shining, on short margined petioles; flowers minute, in narrow axillary panicles which are commonly shorter than the leaves; calyx white, pubescent within, the nearly equal lobes deciduous; filaments very short, the innermost

bearded at the apex; drupe black. (Laurus Catesbyana, *Michx.*) — South Florida. — Shrub 6° – 9° high. Leaves 3′ – 5′ long. Fruiting pedicels club-shaped.

2. SASSAFRAS, Nees.

Involucre none. Flowers dicœciously polygamous. Calyx 6-parted, spreading. Stamens of the sterile flowers 9, in 3 rows, all fertile, the 3 inner ones biglandular at the base; those of the fertile flowers 6, sterile: anthers linear, 4-celled, 4-valved, introrse. Style subulate: stigma disk-like. Drupes blue, on thick red pedicels. — Trees, with entire or 2 – 3-lobed deciduous leaves, and greenish flowers in clustered racemes, appearing before the leaves.

1. **S. officinale,** Nees. Leaves ovate, entire or 2 – 3-lobed, smooth or pubescent; racemes short, silky; flowers sometimes white. (Laurus Sassafras, *L.*) — Dry open woods and old fields, Florida, and northward. March. — A small tree, with spicy bark.

3. BENZOIN, Nees. Spice-Bush.

Involucre 4-leaved. Flowers dicœciously polygamous. Calyx 6-parted. Stamens of the sterile flowers 9 (more numerous and rudimentary in the fertile flowers), in 3 rows: filaments slender, the inner ones lobed and glandular at the base: anthers ovate, 2-celled, 2-valved, introrse. Style short. Drupe obovoid, red, the pedicels not thickened. — Shrubs, with entire deciduous leaves, and dull yellow flowers in lateral sessile clusters, appearing before the leaves.

1. **B. odoriferum,** Nees. Branches slender, smooth; leaves oblong-obovate, acute at the base, paler and pubescent beneath, soon smooth; clusters numerous, smooth. (Laurus Benzoin, *L.*) — Banks of streams and low woods, Florida, and northward. Feb. and March. — A shrub 6° – 10° high, with spicy bark. Leaves 3′ – 5′ long.

2. **B. melissæfolium,** Nees. Leaves oblong, short-petioled, obtuse or slightly cordate at the base, silky on both sides, as also the branchlets and clusters, at length smooth above; drupes obovoid. (Laurus melissæfolia, *Walt.*) — Margins of ponds, West Florida to North Carolina. Feb. and March. — A shrub 2° – 3° high. Leaves 1′ – 2′ long.

4. TETRANTHERA, Jacq.

Involucre 2 – 4-leaved. Flowers dicœcious. Calyx 6-parted, deciduous. Stamens of the sterile flowers 9, in 3 rows; those of the fertile flowers numerous and rudimentary: anthers 4-celled, 4-valved, introrse. Stigma peltate. Drupe globose. — Trees or shrubs, with entire leaves, and small flowers in clustered umbels.

1. **T. geniculata,** Nees. Branchlets smooth, zigzag, spreading; leaves small, oval or oblong, soon smooth, deciduous; involucre 2 – 4-flowered; flowers yellow, appearing before the leaves; drupe red. (Laurus geniculata, *Walt.*) — Shallow pine-barren ponds, Florida, and northward. Feb. and March. — A

large shrub, with numerous spreading and forked branches. Leaves somewhat coriaceous, $\frac{1}{2}' - 1'$ long.

5. CASSYTA, L.

Flowers perfect. Calyx 6-cleft, persistent, the exterior lobes minute. Stamens 12, in 4 rows, the inner row sterile: anthers 2-celled, the inner ones extrorse, the outer introrse. Style very short: stigma disk-like. Fruit enclosed in the fleshy persistent tube of the calyx. — A leafless parasitic plant, with twining filiform stems, and spiked flowers.

1. **C. filiformis,** Miller. — South Florida. — Spikes 2 - 4-flowered. Calyx-lobes thick, triangular, acute. Anthers oval, obtuse.

ORDER 112. THYMELEACEÆ. (MEZEREUM FAMILY.)

Shrubs, with acrid juice, tough bark, simple entire dotless leaves, without stipules, and regular perfect flowers, with a tubular or bell-shaped 4 - 5-cleft rarely entire calyx. Stamens commonly twice as many as the calyx-lobes, in 2 rows: anthers 2-celled, opening lengthwise. Style simple: stigma capitate. Drupe with a single suspended anatropous seed, containing little or no albumen. Cotyledons plano-convex. Radicle superior.

1. DIRCA, L. LEATHERWOOD.

Calyx bell-shaped, entire, or obscurely 4-toothed. Stamens 8, unequal, exserted. Style filiform. Albumen none. — A low branching shrub, with alternate petioled oblong or obovate at length smooth and deciduous leaves, and light yellow flowers, from hairy buds, appearing before the leaves.

1. **D. palustris,** L. — Shady banks of streams, Florida, and northward. Feb. and March. — Shrub 2° - 3° high, with pale spreading jointed branches. Leaves 2′ long, silky when young. Flowers three in a cluster, on short pedicels. Drupe small, red.

ORDER 113. SANTALACEÆ. (SANDALWOOD FAMILY.)

Herbs, shrubs, or trees, with simple entire exstipulate leaves. — Calyx tubular, 4 - 5-cleft, valvate in the bud, the tube coherent with the ovary. Stamens 4 - 5, opposite the lobes, and inserted on the fleshy disk at their base: anthers introrse, opening lengthwise. Ovary 1-celled, with 2 - 4 anatropous ovules suspended from the apex of the free central placenta. Style single. Fruit 1-seeded. Embryo small, at the apex of copious albumen. Cotyledons cylindrical. Radicle superior.

Synopsis.

* Flowers perfect.

1. COMANDRA. Anthers connected with the calyx-lobes by a tuft of hairs. Leaves alternate.

* * Flowers dicœcious. Shrubs.

2. DARBYA. Calyx 4 – 5-cleft. Anthers connected with the calyx-lobes by a tuft of hairs. Leaves opposite. Flowers umbelled.
3. PYRULARIA. Calyx 5-cleft. Stamens 5. Anthers free. Albumen oily. Leaves alternate. Flowers spiked.
4. BUCKLEYA. Calyx-limb double, each 4-lobed. Stamens 4. Anthers free. Albumen fleshy. Leaves nearly opposite. Flowers terminal.

1. COMANDRA, Nutt.

Flowers perfect. Calyx bell-shaped, 5-cleft, the persistent lobes alternating with the lobes of the disk. Stamens 5: anthers connected with the calyx-lobes by a tuft of hairs. Stigma capitate. Fruit nut-like, 1-seeded. — Smooth perennial herbs, with alternate leaves, and small greenish-white flowers, in axillary and terminal umbel-like peduncled clusters.

1. **C. umbellata,** Nutt. Stem branching above; leaves sessile, lanceolate or oblong; peduncles several, corymbose, 3 – 5-flowered, mostly longer than the leaves; style slender; fruiting calyx urn-shaped. (Thesium umbellatum, *L.*) — Dry soil in the upper districts of Georgia, and northward. April and May. — Stem 8′ – 10′ high. Leaves ½′ – 1′ long.

2. DARBYA, Gray.

Flowers dicœcious. Sterile flowers top-shaped, 4 – 5-cleft, the lobes ovate, spreading. Stamens 4 – 5, inserted into the sinuses of the crenately 4 – 5-lobed disk: filaments short: anthers connected with the calyx-lobes by a tuft of hairs. Fruit 1-celled, 1-seeded. Fertile flowers unknown. — A small shrub, with opposite oval membranaceous short-petioled leaves, and small greenish flowers in axillary peduncled umbels.

1. **D. umbellulata,** Gray. — Near Milledgeville and Macon, Georgia, *Dr. Boykin, Prof. Darby.* Lincolnton, North Carolina, *Curtis.* — Shrub 1° – 1½° high. Leaves 1′ long, smooth. Peduncles 3 – 8-flowered, shorter than the leaves.

3. PYRULARIA, Michx. Oil-Nut.

Flowers dicœcious. Calyx 5-cleft, the lobes recurved. Disk composed of 5 roundish glands. Stamens of the sterile flowers short, alternate with the glands. Fertile flower pear-shaped. Style short and thick: stigma depressed-capitate. Drupe pear-shaped, fleshy. Albumen oily. — A low branching shrub, with alternate deciduous leaves, and small greenish flowers in a short terminal spike.

1. **P. oleifera,** Gray. (Hamiltonia oleifera, *Muhl.*) — Shady banks on the mountains, Georgia, and northward. May. — Leaves petioled, obovate-oblong, acute at each end, pubescent, 3′ – 4′ long. Drupe 1′ long.

4. BUCKLEYA, Torr.

Flowers dicœcious. Calyx club-shaped, the limb double, each 4-parted; the exterior lobes linear, leafy, somewhat persistent, the interior triangular-ovate, slightly imbricated in the bud, deciduous. Stamens of the sterile flower 4. Disk of the fertile flower 4-lobed, fleshy. Style short: stigma 4-lobed. Drupe oblong, compressed, furrowed. Embryo slender, in the axis of copious fleshy albumen. — An erect shrub, with straight and slender branches. Leaves scarcely petioled, nearly opposite, distichous, lanceolate, acute, pubescent. Flowers terminal, greenish, the sterile ones umbellate, the fertile solitary.

1. **B. distichophylla,** Torr. — Mountains of North Carolina, *Buckley.* — Shrub 6° – 7° high. Leaves thin, 1′ – 1½′ long. Calyx-tube 4″ – 5″ long, scarcely longer than the exterior spreading lobes, much longer than the inner ones. Drupe ½′ long.

ORDER 114. LORANTHACEÆ. (MISTLETOE FAMILY.)

Parasitical shrubby plants, with evergreen almost veinless leaves, without stipules, and perfect or dicœcious flowers. — Calyx of 2 – 8 sepals, distinct or united into a tube, valvate in the bud, sometimes wanting. Stamens as many as the sepals and opposite them. Ovary 1-celled, commonly with a single suspended ovule. Style simple or none. Fruit berry-like. Seeds anatropous. Embryo longer than the fleshy albumen.

1. PHORADENDRON, Nutt. MISTLETOE.

Flowers dicœcious, in short jointed spikes. Calyx of the sterile flower globular, 2 – 4-lobed. Anthers sessile at the base of the lobes, transversely 2-celled. Calyx of the fertile flower adnate to the ovary. Stigma sessile. Berry globose, pulpy, 1-seeded. — Evergreen shrubs, growing on the branches of various trees, with brittle jointed stems, thick persistent leaves, and small flowers in axillary spikes.

1. **P. flavescens,** Nutt. (Viscum flavescens, *Pursh.*) — Florida to Mississippi, and northward. April and May. — Plant yellowish, 2° – 3° long. Branches opposite or whorled. Leaves obovate, fleshy. Spikes shorter than the leaves. Berry white, glutinous.

ORDER 115. SAURURACEÆ. (LIZARD'S-TAIL FAMILY.)

Perennial marsh herbs, with jointed stems, alternate entire leaves, with sheathing stipules, and perfect flowers in bracted spikes or racemes. — Calyx and corolla none. Stamens few or many, hypogynous: anthers introrse, opening lengthwise. Ovaries 3 – 5, more or less united. Ovules few, orthotropous, ascending. Embryo minute, cordate, contained in a cavity at the apex of the albumen. Fruit follicular, 1 – few-seeded.

1. SAURURUS, L. Lizard's-Tail.

Stamens 4 – 8, with long club-shaped filaments. Fruit somewhat fleshy, composed of 3 – 4 partly united 1 – 2-seeded carpels, pointed with as many stigmas. — Flowers white.

1. **S. cernuus,** L. Stem erect, branching; leaves petioled, cordate-ovate, or oblong-ovate, acuminate; spikes white, terminal, nodding at the apex; flowers numerous, each from the axil of a small bract. — Marshes and muddy banks, Florida, and northward. May – Aug. — Rhizoma creeping. Stem 1° – 2° high. Spikes 4′ – 6′ long.

Order 116. CERATOPHYLLACEÆ. (Hornwort Family.)

Submerged aquatic herbs, with filiform jointed and branching stems, finely dissected whorled leaves, and small axillary monœcious flowers, destitute of floral envelopes, but surrounded by an involucre of 8 – 12 linear leaves. Anthers 12 – 24, oblong, 2 – 3-toothed, sessile. Ovary solitary, simple, with a single suspended orthotropous ovule. Achenium compressed, pointed with the slender persistent style. Albumen none. Cotyledons 4. Plumule conspicuous. — Consisting of the single genus

1. CERATOPHYLLUM, L. Hornwort.

1. **C. demersum,** L. Leaves rigid, 6 – 9 in a whorl, once or twice forking, with the lobes spiny-toothed; achenium oval, compressed, tubercular-roughened on the sides, and armed near the base with 2 lateral widely-spreading slender spines. — In still water, Florida, and northward. Sept. and Oct. — Stems 1° – 4° long. Leaves near the end of the branches much crowded.

2. **C. echinatum,** Gray? Leaves weak, 9 – 12 in a whorl, 3 – 4 times forking, the ultimate segments bristly-toothed; ovaries warty, unarmed; achenium oblong, tubercular-roughened on the sides, the edges margined and armed with 5 – 7 strong and spreading spines. — Shallow ponds, on St. Vincent's Island, West Florida. May. — Stems 6′ – 12′ long.

3. **C. submersum,** L. Leaves hair-like, 3 – 4 times forking, bristly-toothed; achenium oblong, slightly compressed, tubercular-roughened, with rounded margins, unarmed. — South Florida, *Dr. Blodgett.* — Stems 6′ – 12′ long.

Order 117. CALLITRICHACEÆ. (Water-Starwort Family.)

Small aquatic annuals, with opposite entire leaves, and solitary axillary polygamous flowers without floral envelopes. Stamen mostly solitary, 2-bracted in the sterile flower. Filament slender: anther reniform, the

cells confluent. Styles 2, slender: stigmas acute. Capsule 4-angled, 4-celled, with a single suspended anatropous seed in each cell, indehiscent. Embryo straight, in copious fleshy albumen. Radicle long, superior. — Consisting of the single genus

1. CALLITRICHE, L. WATER-STARWORT.

1. **C. verna,** L. Floating leaves spatulate or obovate, crowded, the lower ones distant, linear; fruit nearly sessile, 2-bracted, keeled on the back. (C. heterophylla, *Ell.*) — Var. TERRESTRIS. Smaller (2′ – 3′ long); stems much branched, creeping on damp earth; leaves (1″ – 2″ long) all linear. — Ditches and shallow water, Florida, and northward. March and April. — Stems several, 6′ – 12′ long. Leaves ½′ long.

ORDER 118. PODOSTEMACEÆ. (RIVER-WEED FAMILY.)

Moss-like aquatic plants, with minute flowers, from a spathe-like involucre, and destitute of floral envelopes. — Stamens 5 – 12: anthers 2-celled. Capsule 2 – 3-celled, and pointed by as many persistent styles. Seeds numerous, on a thick central placenta, destitute of albumen.

1. PODOSTEMON, Michx. RIVER-WEED.

Spathe 2-leaved. Flowers pedicelled. Filaments elongated, borne on one side of the stalk of the ovary, united below, and bearing only a single anther. Styles 2, simple. Capsule ribbed, 2-celled, 2-valved. Seeds imbricated. — Submerged aquatic plants, attached to rocks and pebbles by disk-like expansions of the stem. Leaves 2-ranked, divided into filiform segments.

1. **P. ceratophyllum,** Michx. Leaves rigid, sparingly divided, sheathing at the base; flowers solitary, on slender pedicels; capsule oval, 8-ribbed. — Rocky places in rivers, Georgia, and northward. July. — Plant olive-green, 1′ – 4′ long.

2. **P. abrotanoides,** Nutt. Leaves much divided, with hair-like segments; flowers 2 – 3 together, on short pedicels; capsule oblong, 10-ribbed. — Gravelly places in the Chattahoochee River, *Nuttall.* — Plant larger than the last.

ORDER 119. EUPHORBIACEÆ. (SPURGE FAMILY.)

Plants commonly with acrid milky juice, and monœcious or diœcious often petalous flowers. — Calyx 2 – 8-lobed, mostly valvate in the bud, sometimes wanting. Stigmas 2 – several, simple or divided. Fruit of 2 – several (mostly 3) 1 – 2-seeded carpels united around a central axis, separating at maturity, rarely 1-celled or indehiscent. Seeds suspended, anatropous. Embryo in fleshy albumen. Cotyledons flat.

Synopsis.

§ 1. Ovules and seeds solitary in the cells. Flowers monœcious.

* Flowers without floral envelopes, enclosed in a common cup-shaped involucre.

1. EUPHORBIA. Fertile flower solitary in the 4 - 5-toothed involucre. Sterile flowers several, each reduced to a single stamen.

* * Flowers in bracted spikes or racemes; the upper ones sterile, the lowest fertile.

+– Flowers apetalous.

++ Stigmas and cells of the capsule 6 – 7.

2. HIPPOMANE. Carpels woody, indehiscent. Spikes terminal. Staminate flowers clustered.

++ ++ Stigmas and cells of the dehiscent capsule 3.

3. STILLINGIA. Calyx 2 - 3-toothed. Anthers erect. Staminate flowers clustered.
4. EXCŒCARIA. Calyx 3-parted. Anthers pendulous. Staminate flowers single.
5. ACALYPHA. Stigmas many-parted. Flowers spiked. Bracts of the pistillate flowers leafy, toothed.
6. TRAGIA. Stigmas 3, simple. Flowers racemed. Bracts small, entire.

+– +– Staminate flowers (except No. 1 in Croton), or the pistillate also furnished with petals.

7. CROTON. Pistillate flowers apetalous, or with minute petals. Stamens 6 or more, distinct.
8. CROTONOPSIS. Pistillate flowers apetalous. Capsule 1-celled. Stamens 5, distinct.
9. APHORA. Pistillate and staminate flowers 5-petalled. Capsule 3-celled. Stamens 10, monadelphous.

* * * Flowers cymose or panicled, apetalous.

10. CNIDOSCOLUS. Flowers cymose. Calyx white, corolla-like.
11. RICINUS. Flowers in crowded panicles. Calyx herbaceous.

§ 2. Ovules, and commonly the seeds, 2 in the cells.

* Flowers monœcious, apetalous. Ovary 3-celled. Herbs.

12. PHYLLANTHUS. Flowers axillary. Calyx 5 - 6-parted. Stamens 3, monadelphous.
13. PACHYSANDRA. Flowers spiked. Calyx 4-parted. Stamens 4, distinct.

* * Flowers dicœcious, apetalous. Ovary 2-celled. Shrubs.

14. DRYPETES. Flowers in axillary clusters. Fruit drupaceous, 1-celled, 1-seeded.

1. EUPHORBIA, L. Spurge.

Flowers monœcious, destitute of calyx and corolla; the single pistillate, and several monandrous staminate ones included in a cup-shaped or top-shaped 4 – 5-toothed involucre, which has commonly thick and often colored glands between the teeth. Styles 3, 2-cleft. Capsule exserted, 3-celled: carpels 2-valved, 1-seeded. — A polymorphous genus of plants with acrid milky juice.

§ 1. *Leaves without stipules.*

* *Stem erect, umbellately branched above: involucres solitary, terminal and in the forks of the branches: leaves of the stem alternate, those of the branches opposite or whorled.*

+– *Glands of the involucre* 5, *with white petal-like appendages: leaves entire: perennials.*

1. **E. corollata,** L. Stem smooth or pubescent; branches 4 – 6, twice or thrice forking, mostly short and fastigiate; leaves thick, oblong or oval, obtuse, pale and mostly hairy beneath; involucres pedicelled; appendages of the (green)

glands orbicular, showy; capsule and seed smooth. (E. paniculata, *Ell.*) —Var. ANGUSTIFOLIA, Ell. Stems slender; branches mostly 3, forking, elongated, spreading; leaves varying from linear to obovate; involucres small, scattered; appendages of the glands transversely oblong. — Dry rich soil, Florida to Mississippi, and northward; the var. in sandy pine barrens. July – Sept. — Stem 1° – 2° high.

2. **E. discoidalis,** n. sp. Smooth or pubescent; branches commonly 2, divaricate, forking; leaves linear, obtuse, with the margins revolute; involucres on slender pedicels; glands deep red, bordered by the narrow appendages; seeds obovate, pale, minutely pitted. — Dry sandy pine barrens near the coast, West Florida. Aug. – Oct. Plant 6′ – 18′ high; the stem much shorter than the branches. Leaves 2′ – 3′ long, 1″ – 2″ wide. Involucres scattered.

3. **E. Curtisii,** Engelm. Smooth; stems filiform; branches mostly 3, erect, sparingly divided; leaves thin, linear or linear-oblong, obtuse, short-petioled, spreading or recurved; involucres minute, scattered, on long capillary pedicels; glands green, margined by the white crenate appendages; capsule erect, short-stalked, round-angled; seed globose, smooth. — Low pine barrens, Florida to North Carolina. Aug. — Plant 6′ – 9′ high, sometimes branching from the base. Leaves ½′ – 1½′ long.

Glands of the involucre 5, *without appendages.*

Annuals.

4. **E. commutata,** Engelm. Smooth; stems erect or ascending, umbellately or alternately branched; leaves thin, obovate, entire, the lower ones petioled, those of the branches round-kidney-shaped, sessile; involucres nearly sessile, shorter than the floral leaves; glands crescent-shaped or 2-horned; capsule smooth, round-angled; seeds ovoid, pitted. — Dry soil, Aspalaga, Florida, and probably elsewhere, previously confounded with E. Peplus, *L.*, which has a wing-crested capsule. — Stem 6′ – 12′ high. Leaves ½′ – 1′ long. Plant pale green.

5. **E. obtusata,** Pursh. Smooth; stem erect; branches 3 – 5; leaves sessile, serrulate, obtuse; those of the stem wedge-oblong, of the branches ovate; involucre nearly sessile; glands oval; capsule round-angled, warty; seeds smooth. (E. Helioscopia, *Ell.?*) — Shady woods, South Carolina, and northward. July – Sept. — Stem 1° high. Leaves 1′ long.

Perennials.

6. **E. Darlingtonii,** Gray. Stem tall; branches 5 – 8, forking; leaves entire, slightly pubescent beneath; those of the stem oblong, of the branches oval or roundish, obtuse, truncate at the base; involucres nearly sessile; glands obliquely oval; capsule obscurely warty; seeds smooth. — Mountains of North Carolina, and northward. July. — Stem 2° – 4° high.

7. **E. Floridana,** n. sp. Smooth; stem erect; branches 3 – 4, forking; leaves entire, sessile; those of the stem linear or linear-lanceolate, mostly acute, reflexed; of the branches cordate-ovate, clasping, acute; involucres short-pedicelled, green, with the ovate lobes nearly entire, much shorter than the truncate crenate stalked glands; capsule acute-angled, and, like the seeds, smooth. — Dry

pine barrens, Middle Florida. June – Aug. — Stem 1° – 2° high. Branches of the more sterile plants successively forking and widely spreading. Leaves 1′ – 2′ long.

8. **E. inundata,** Torr. Smooth; stem erect, 3-branched or alternately branched from near the base, few-flowered; leaves erect, lanceolate, entire, acute, sessile; those of the branches oblong-ovate, clasping; involucre long-peduncled, reddish, the pubescent lobes 3-toothed; glands orbicular, peltate, entire; capsules acute-angled, smooth, like the globose seed. — Pine-barren swamps, Florida. April – June. — Stems 6′ – 12′ high, from a thick woody root. Leaves 2′ – 3′ long.

9. **E. telephioides,** n. sp. Smooth and somewhat fleshy; stem thick; branches 3, short, forking; leaves of the stem large, oblong-obovate, obtuse, erect, with membranaceous margins; those of the branches small, ovate, clasping; involucre purple, slender-stalked, the lobes ovate, entire, ciliate, incurved; glands peltate, roundish, entire; capsule acute-angled, smooth; seeds smooth. — Low sandy pine barrens near the coast, West Florida. May and June. — Plant light-green, 2′ – 5′ high. Stem-leaves 2′ – 3′ long, often longer than the branches. Floral leaves 4″ – 6″ long.

* * *Stem erect, successively forking: leaves commonly opposite: involucres in the forks dark purple: glands* 5, *without appendages: perennials.*

10. **E. Ipecacuanhæ,** L. Stems several from a long perpendicular root, slender, commonly forking from near the base; leaves of the stem and branches similar, opposite, or the lowest rarely alternate, entire, obtuse, varying from linear to round-obovate, short-petioled; peduncles slender, mostly longer than the leaves; involucre small; capsule slender-stalked, nodding, round-angled; seeds minutely pitted. — Dry sandy soil, Florida to Mississippi, and northward. May and June. — Stem 2′ – 12′ high. Leaves ½′ – 1′ long.

11. **E. nudicaulis,** n. sp. Smooth; stems slender, forking above; leaves minute (½″ long), oval or obovate, the lowest alternate, those of the branches opposite; involucres minute, on short peduncles; glands top-shaped. — Low pine barrens, near St. Joseph's, West Florida. June. — Stems 1° high. Capsule and seeds unknown.

* * * *Branches and leaves alternate: involucres terminal, clustered or single: glands without appendages.*

12. **E. cyathophora,** Jacq. Annual, smooth; stem erect, branching from the base; branches elongated, leafy at the summit; leaves petioled, oblong, fiddle-shaped, toothed or entire, the uppermost deep red at the base; involucres clustered, short-stalked, with 5 incised lobes and a single gland; capsule smooth; seeds globose, warty. — Var. graminifolia (E. graminifolia, *Michx.*) has the leaves all linear and entire. — South Florida, and around dwellings, apparently introduced. May – Oct. — Stem 1° – 2° high. Leaves 2′ long.

13. **E. trichotoma,** H. B. K. Shrubby; stem irregularly much branched, very leafy; leaves small, imbricated, oblong-obovate, acute, obscurely crenate, sessile; involucre solitary, top-shaped, sessile; glands 5, peltate; capsule smooth, short-stalked. — South Florida. — Stem low. Leaves 3″ – 4″ long.

§ 2. *Leaves stipulate, all opposite: glands of the involucre 4: annuals.*

* *Stems erect or ascending: seeds 4-angled, transversely rugose.*

14. **E. hypericifolia,** L. Smooth throughout; stem ($\frac{1}{2}$°–1° high) erect; branches alternate, 2-ranked; leaves ($\frac{1}{2}$′–1′ long) petioled, lanceolate-oblong, oblique and obtuse or acute at the base, equally serrulate on both margins; stipules reflexed; involucres in dense lateral long-peduncled cymose clusters; appendages of the glands white, kidney-shaped; capsules rather acutely angled, smooth; seed minute, reddish. — South Florida. — Var. COMMUNIS, Engelm. Stem often pubescent, ascending (1°–1$\frac{1}{2}$° high); oblong or lanceolate, obtuse or cordate at the base, often blotched with red, sharply serrate on the lower margin, entire below the middle on the upper; clusters terminal; appendages of the glands rounded, entire; capsule round-angled, smooth; seeds larger, nearly black. — Cultivated grounds, Florida, and northward. Aug. and Sept.

15. **E. pubentissima,** Michx. "Perennial, erect, very pubescent; stem somewhat dichotomous; leaves opposite, sessile, oval, slightly cordate, obtuse; peduncles solitary; interior segments of the involucre (glands) white." *Michaux.* — "Pine barrens in the middle districts of Georgia and Carolina. — Leaves nearly 1′ long. Flowers in the forks; peduncles nearly as long as the leaf." *Elliott.* (*)

16. **E. glabella,** Swartz? Stem stout, smooth, ascending, alternately branching or forking from the base, purple; leaves very numerous, somewhat fleshy, nearly sessile, oblong-ovate, cordate, acute, entire, with the margins involute, the uppermost crowded; involucres in dense terminal clusters; glands peltate, orbicular, bordered by a white appendage; capsule smooth, acute-angled; seed bluish, faintly rugose. — Sandy sea-shore, South Florida. — Stem 1° high. Leaves 3″–5″ long. Stipules fringed.

17. **E. pilulifera,** L. Pubescent; stem erect, forking from the base; leaves short-petioled, oblong-ovate, oblique, acute at each end, serrate; involucres minute, in dense terminal short-stalked clusters; glands without appendages; capsule acute-angled, hairy; seeds faintly rugose. — South Florida. — Stem 4′–6′ high. Leaves 5″–8″ long.

* * *Stems prostrate, diffuse: leaves small: involucres small and mostly crowded near the summit of the branches.*

18. **E. maculata,** L. Pubescent; leaves oblong, serrate, oblique at the base, petioled, often blotched with purple; stipules 2-parted; capsule acute-angled, hairy; appendages of the glands transversely oblong, white; seed 4-angled, smooth, faintly wrinkled or pitted on the concave sides. (E. depressa, *Torr.*) — Cultivated ground and waste places, very common. June–Oct. — Stems 6′–12′ long. Leaves 3″–4″ long.

19. **E. inæquilatera,** Sonder. Smooth; leaves oval or obovate, oblique and acute or obtuse at the base, obscurely serrulate, petioled; stipules ovate, entire or sparingly short-fringed; appendages of the glands white, transversely oblong; capsule smooth, acute-angled; seed 4-angled, granular-roughened and faintly wrinkled on the sides. — South Florida. May–Oct. — Stems 6′–12′ long. Leaves 2″–5″ long.

20. **E. cordifolia,** Ell. Smooth; leaves petioled, oval or roundish, entire, obtuse, cordate or truncate and oblique at the base; stipules slender, deeply parted into long capillary segments; appendages of the glands conspicuous, oblong or roundish, white; capsule smooth, acute-angled; seed 4-angled, smooth and even. — Sandy pine barrens, Florida to South Carolina, and westward. — July – Sept. — Stems 6′ – 18′ long. Leaves 4″ – 6″ long, pale green.

21. **E. polygonifolia,** L. Smooth and somewhat fleshy; leaves oblong or linear-oblong, entire, oblique, obtuse or slightly cordate at the base, petioled; stipules by pairs, 2 – 3-parted; glands of the involucre slightly margined by the narrow appendages, rather shorter than the subulate obtuse lobes; capsule smooth, acute-angled; seed large, obovate, not angled, smooth and even. — Drifting sands along the coast, Florida, and northward. July – Oct. — Stems 4′ – 12′ long. Leaves ½′ long. Involucres densely bearded within. Seed whitish.

2. HIPPOMANE, L.

Flowers monœcious, apetalous, in thick cylindrical spikes. Sterile flowers clustered in the axil of a broad entire bract. Calyx top-shaped, 2-lobed. Stamens 2, exserted: anther-cells separate. Fertile flower solitary at the base of the spike. Calyx 3-parted, many-bracted. Ovary sessile, 6 – 7-celled. Style short and thick: stigmas 6 – 7, acute, spreading. Fruit fleshy, of few woody 1-seeded indehiscent carpels. — A small tree, with milky poisonous juice, and short and thick branches. Leaves alternate, stipulate, petioled, ovate, serrulate, acute or acuminate, smooth, approximate at the summit of the branches. Petioles biglandular at the apex. Spikes greenish.

1. **H. Mancinella,** L. — South Florida. — Branches roughened with the scars of the deciduous leaves. Leaves 1′ – 2′ long. Spikes 2′ long, terminal, solitary. Clusters of flowers with a gland-like bract on each side. Fruit resembles an apple.

3. STILLINGIA, Gard.

Flowers monœcious, apetalous, spiked. Sterile flowers clustered, cup-shaped, 2 – 4-toothed or crenate. Stamens 2 – 3, exserted: anthers erect. Fertile flowers few at the base of the spike. Calyx 3-lobed. Style short: stigmas 3, entire, spreading. Capsule roundish, of three 1-celled 1-seeded 2-valved carpels. — Smooth herbs, shrubs, or trees, with milky juice. Leaves alternate, stipulate. Bracts with a fleshy gland on each side.

1. **S. sylvatica,** L. (Queen's Delight) Herbaceous; stems clustered, erect or ascending from a thick woody root, umbellately branched; leaves somewhat crowded, nearly sessile, thickish, varying from linear-lanceolate to obovate, obtuse or acute, crenate-serrulate; spikes yellowish, terminal, and in the forks of the stem, longer than the leaves; glands cup-shaped; stamens 2; capsule roughish; seed globose. — Light dry soil, Florida to North Carolina, and westward. April – Sept. — Stems 1° – 3° high. Leaves 1′ – 2′ long. Spikes 2′ – 3′ long.

2. **S. aquatica,** n. sp. Shrubby; stem single, erect from a fibrous spongy root, umbellately or alternately branched above, thickened near the base; leaves lanceolate, mostly acute, tapering at each end, short-petioled, sharply serrulate, the uppermost yellowish; stipules bristly; spikes mostly shorter than the leaves, terminal and in the forks of the stem; glands peltate; stamens 2; capsule smooth; seeds globose, pitted, silvery-coated. — Pine-barren ponds, Florida to South Carolina. May – Sept. — Stem 3° – 6° high. Leaves 2′ – 4′ long.

3. **S. ligustrina,** Michx. Shrubby; branches alternate, slender; leaves petioled, ovate-lanceolate or oblong-ovate, mostly obtuse, narrowed at the base, entire; stipules ovate; spikes short, often by pairs, shorter than the leaves, lateral and terminal; stamens 3; capsule and oval seed smooth. — River-swamps, Florida to North Carolina, and westward. May – Aug. — Shrub 6° – 12° high. Branches spreading. Leaves 1′ – 3′ long.

4. **S. sebifera,** Michx. Arborescent; leaves long-petioled, rhomboidal, acuminate, entire; spikes terminal, densely flowered; sterile flowers pedicelled; calyx 4-toothed; stamens 2; capsule roughish; seeds white. — Georgia and South Carolina, near the coast; introduced from China. June and July. — A tree 20° – 40° high.

4. EXCŒCARIA, L.

Flowers monœcious or dicœcious, apetalous. Sterile flowers in cylindrical spikes, sessile. Calyx 3-parted. Stamens 2 – 4, partly monadelphous: anthers pendulous. Fertile flowers few or solitary at the base of the sterile spike, sessile or peduncled. Calyx 3-sepalous; style 3-parted: stigmas entire, spreading. Capsule of three 1-celled, 1-seeded, 2-valved carpels. — Shrubs or trees, with milky juice, and alternate serrate or crenate leaves.

1. **E. lucida,** Swartz. Smooth; leaves coriaceous, petioled, obovate or oblong, obtuse or emarginate, crenate; fertile flowers solitary or by pairs, long-peduncled, nodding; capsule round-angled, smooth, like the ovoid seed. — South Florida. — Tree 30° – 40° high. Leaves 1′ – 1½′ long.

5. ACALYPHA, L.

Flowers monœcious, apetalous, in axillary and terminal spikes. Staminate flowers clustered, minutely bracted. Calyx 4-parted. Stamens 8 – 16, with the filaments united at the base; anthers pendulous. Pistillate flowers at the base of the staminate ones, or on separate spikes, surrounded by a leafy toothed bract. Calyx 3-parted. Styles 3, many-cleft. Capsule roundish, of three 1-celled, 1-seeded, 2-valved carpels. — Herbs, with watery juice, and alternate serrate leaves.

* *Staminate and pistillate flowers on the same spike.*

1. **A. Virginica,** L. Annual, smoothish or hairy; stem erect, branched; leaves thin, long-petioled, rhombic-ovate or oblong-ovate, acute, coarsely serrate above the middle; staminate spikes few-flowered, mostly shorter than the large 5 – 9-lobed bracts, with 1 – 3 pistillate flowers at the base; capsule pubescent. —

Fields and around dwellings, Florida, and northward. July – Sept. — Stem 1° – 2° high. Leaves, with the petiole, 4′ – 5′ long.

2. **A. gracilens,** Gray. Annual, downy; stem slender, erect or ascending; leaves short-petioled, lanceolate, obscurely serrate or entire; staminate spikes mostly many-flowered and longer than the ovate-serrate or toothed bracts, with 1 – 3 pistillate flowers at the base; capsule hairy. — Sterile soil, Florida, and northward. July – Sept. — Stem 6′ – 18′ high. Leaves 1′ – 1½′ long.

3. **A. corchorifolia,** Willd. Perennial; stems several from a thick and woody root, prostrate, pubescent, simple or sparingly branched; leaves short-petioled, ovate and oblong, obtuse, crenate, hairy; pistillate flowers numerous, crowded at the base of the slender staminate spike, each surrounded by a round-ovate hairy toothed bract; capsule bristly; seed ovoid, smooth. — South Florida. — Stems 4′ – 6′ long. Leaves rigid, 6″ – 8″ long. Spikes mostly terminal.

*** Staminate and pistillate flowers on separate spikes.*

4. **A. Caroliniana,** Walt. Annual; stem erect, much branched, pubescent; leaves thin, smooth, cordate-ovate, sharply serrate, long-petioled; staminate spike lateral, small, the minute white flowers pedicelled; pistillate spike terminal, stout, many-flowered; bracts cut into several subulate lobes; capsule bristly; seeds silvery, pitted. — Cultivated ground, Florida to Mississippi, and northward. July – Sept. — Stem 1° – 2° high. Leaves 2′ – 3′ long.

6. TRAGIA, Plum.

Flowers monœcious, apetalous, in slender racemes. Sterile flowers few or numerous, caducous. Calyx 3 – 4-parted. Stamens 2 – 4, with short and separate filaments. Fertile flowers few or solitary at the base of the raceme. Calyx 5 – 8-parted. Style 3-cleft: stigmas entire. Capsule bristly, of three globose 1-celled, 1-seeded, 2-valved carpels. — Pubescent or bristly herbs, with watery juice. Leaves alternate. Racemes opposite the leaves and terminal. Bracts small, entire, persistent. Flowers minute, greenish.

1. **T. urens,** L. Low, downy or hairy; stem at length much branched; leaves nearly sessile, varying from broadly ovate or oblong-ovate, and serrate or toothed throughout, or only at the apex, to linear and entire, obtuse, paler beneath; racemes shorter than the leaves and few-flowered, or elongated and many-flowered. (T. linearifolia, *Ell.*, the narrow-leaved form.) — Dry sandy soil, Florida, and northward. May – Aug. ♃ — Stem 6′ – 12′ high. Leaves 1′ – 2′ long.

2. **T. urticifolia,** Michx. Bristly, with stinging hairs; stem erect, sparingly branched; leaves petioled, deltoid-ovate or oblong, coarsely serrate, truncate or cordate at the broad base, pale beneath, racemes shorter than the leaves, the sterile flowers somewhat crowded; capsule very bristly. — Dry soil, Florida to North Carolina, and westward. June – Sept. ♃ — Stems 1° – 2° high. Leaves 1′ – 2′ long.

7. CROTON, L.

Flowers monœcious, in spikes or racemes. Calyx of the sterile flowers 4 – 6-cleft or 4 – 6-parted. Petals 4 – 6 (wanting in No. 1). Stamens 5 – 20, distinct: anthers erect, introrse. Glands as many as the calyx-lobes and opposite them. Fertile flowers at the base of the sterile spike. Calyx 5 – 8-cleft or 5 – 8-parted. Petals minute or wanting. Styles 2 – 3, once – thrice 2-cleft. Capsule of 3 (rarely 1 – 2) 1-celled, 1-seeded, 2-valved carpels. Glands as many as the calyx-lobes or none. — Herbs or shrubs, with watery juice, stellate pubescence, and alternate petioled leaves. Flowers terminal, and at the divisions of the stem.

* *Styles very short: stigmas* 18 – 20: *petals none: stamens mostly* 12: *capsule 3-celled.*

1. **C. maritimum,** Walt Herbaceous; whole plant covered with a rough scurfy stellate and somewhat hoary pubescence; stem stout, bushy, umbellately branched; leaves thick, long-petioled, ovate, obtuse, entire, rounded or slightly cordate at the base, hoary beneath; spikes long-peduncled, capitate, few-flowered, the sterile and fertile ones mostly separate; calyx 5-cleft, with ovate-obtuse lobes; capsule much longer than the calyx; seeds ovoid, mottled. — Drifting sands along the coast, Florida to North Carolina. July – Oct. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Flowers occasionally polygamous.

* * *Styles* 3, *twice 2-parted or 2-cleft: stigmas* 12: *petals of the sterile flowers* 5 – 6, *of the fertile none: stamens* 8 – 15: *capsule 3-celled.*

2. **C. balsamiferum,** Willd. Shrubby; stem smooth, whitish; branches stellate-pubescent, roughish; leaves slender-petioled, ovate, acute, crenulate, sprinkled with rigid stellate hairs, hoary when young; spikes woolly, at length elongated; sterile flowers numerous, the fertile ones few; calyx of the sterile flower 5-parted, longer than the woolly-margined petals; style twice 2-parted; the divisions long, filiform; stamens about 15; capsule much longer than the calyx; seed ovoid, smooth. — South Florida. — Shrub 1° – 2° high. Leaves thin, 1′ – 1½′ long.

3. **C. Elliottii.** Annual, stellate-tomentose throughout; stem slender, erect, umbellately much branched; leaves short-petioled, lanceolate or oblong, entire, obtuse at each end, green above, pale beneath, the lowest scattered, the others mostly crowded at the divisions of the stem and summit of the branches; sterile flowers few, minute; calyx 5-parted, unequal, longer than the petals; stamens 8 – 10; fertile flowers several, clustered; calyx 5 – 8-parted, with oblong obtuse lobes, as long as the capsule; style twice 2-parted: seeds oval, smooth, flattened on the inner face. (C. ellipticum, *Ell.*) — Pine barrens, Florida to South Carolina. July – Sept. — Stem 2° – 3° high. Leaves 1½′ – 2′ long.

4. **C. argyranthemum,** Michx. Herbaceous, perennial, covered throughout with stellate silvery scales; stem erect, umbellately branched; leaves obovate or oblong, obtuse, entire, silvery beneath, narrowed into a petiole; racemes sessile, oblong, obtuse; the fertile flowers numerous and crowded; calyx 5 – 6-parted, with the lobes acute; stamens 10 – 12, hairy; styles long and slender, 4-cleft at the apex; capsule much longer than the calyx. — Dry sandy pine

barrens, Georgia and Florida. June – Sept. — Stem 6′ – 12′ high. Leaves 1′ – 1½′ long.

* * * *Styles* 3, *2-cleft: stigmas* 6 : *petals of the sterile flowers longer than the calyx, of the fertile ones minute, subulate: stamens* 8 : *capsule* 3*-celled.*

5. **C. glandulosum,** L. Annual, rough with bristly hairs; stem umbellately branched; leaves oblong, obtuse, coarsely serrate, mostly crowded at the divisions of the stem and summit of the branches; the slender petiole biglandular at the apex; spikes small; sterile flowers minute, white; calyx 4-parted; petals 4; fertile flowers few, with the calyx 5-parted. — Dry waste places, Florida to North Carolina, and westward. July – Sept. — Stem 6′ – 18′ high.

* * * * *Styles* 2, *2-parted: stigmas* 4 : *petals* 5 *in the sterile flowers, none in the fertile: stamens* 5 – 10 : *capsule* 1 – 2*-celled.*

6. **C. monanthogynum,** Michx. Annual; stem erect, twice or thrice umbellately branched, the spreading forking branches, like the leaves and racemes, stellate-tomentose; leaves on slender petioles, ovate or oblong, entire, obtuse, whitish beneath; racemes in the forks of the branches, few-flowered; the sterile flowers corymbose; the fertile (1 – 2) nodding. — Dry sterile soil, South Florida to North Carolina. June – Sept. — Stem 1° high. Leaves 1′ long.

8. CROTONOPSIS, Michx.

Flowers monœcious, in terminal and axillary clusters. Calyx of the sterile flowers 5-parted. Petals and stamens 5. Filaments separate, dilated upward. Fertile flowers below the sterile. Calyx 3 – 5-parted. Petals none. Petal-like glands 5, opposite the calyx-lobes. Ovary 1-celled, 1-ovuled. Stigmas 3, each 2-cleft. Fruit globose, indehiscent, 1-seeded. — A low and slender branching annual. Leaves linear or lanceolate, short-petioled, entire, green and hairy above, the lower surface, like the branches, covered with silvery scales. Flowers minute.

1. **C. linearis,** Michx. — Dry sandy soil, Florida to North Carolina. Aug. – Sept. — Stem 6′ – 12′ high, alternately branched or forking. Leaves ½′ – 1′ long, alternate or opposite.

9. APHORA, Nutt.

Flowers monœcious, in axillary spikes. Sterile flowers few. Calyx 5-parted. Corolla of 5 spatulate petals alternating with 5 flattened glands, as long as the calyx. Stamens 10 – 12, in 2 whorls of 5 – 6 each, monadelphous below. Fertile flowers like the sterile, but the petals shorter than the calyx. Style 3-parted, the divisions 2-cleft. Capsule of three 1-celled, 1-seeded, 2-valved carpels. — Shrubs, or herbs, with watery juice.

1. **A. Blodgettii,** Torr. Branches smoothish; leaves alternate, oval or oblong, mostly acute, sharply serrulate, smooth, or sprinkled with simple appressed hairs, abruptly short-petioled; sterile flowers 3 – 5, fertile mostly solitary;

calyx-lobes lanceolate, acute; petals greenish-white; capsule rough-hairy; seed globose, wrinkled. — South Florida. — Shrub 1° – 2° high. Leaves 1′ – 2′ long.

10. CNIDOSCOLUS, Pohl.

Flowers monœcious, apetalous, cymose. Calyx corolla-like. Calyx of the sterile flower salver-shaped, 5-lobed. Stamens 10, the 5 inner ones with monadelphous filaments. Fertile flowers intermingled with the sterile ones. Calyx of 5 sepals, convolute in the bud. Styles 3, many-parted. Capsule of three 1-celled, 1-seeded, 2-valved carpels. — Herbs or shrubs, with alternate leaves, and white flowers.

1. **C. stimulosus,** Gray. Herbaceous, bristly with stinging hairs; stem erect, simple or branched; leaves long-petioled, round-cordate in outline, palmately 3 – 5-lobed or parted, the divisions toothed, pinnatifid, or somewhat bipinnatifid, often discolored; calyx showy; capsule oblong; seed oblong, smooth, spotted. (Iatropha stimulosa, *Michx.*) — Dry pine barrens, Florida to North Carolina. April – Sept. ♃ — Stem ½° – 2° high. Flowers sometimes dicœcious.

11. RICINUS, Tourn. Castor-oil Plant.

Flowers monœcious, apetalous, in a dense oblong panicle, the upper ones fertile. Calyx 3 – 5-parted. Corolla none. Stamens numerous; the filaments much branched: anther-cells distinct, pendulous. Styles 3, 2-parted. Capsule spiny or bristly, of 3 oblong 1-celled, 1-seeded, 2-valved carpels. — Herbs, or (tropical) shrubs or trees, with petioled peltate lobed leaves. Panicles lateral and terminal.

1. **R. communis,** L. Stem large, glaucous; leaves orbicular in outline, palmately 7 – 9-lobed; the lobes oblong or ovate, acuminate, unequally serrate, smooth; petioles glandular; panicles in the forks of the stem, and opposite the leaves, dense, glaucous. Capsules oblong, spiny. — Waste places. Introduced. June – Oct. ☉ — Stem 3° – 10° high. Leaves 1° in diameter. Stipules large, deciduous. Panicle 6′ – 12′ long.

12. PHYLLANTHUS, Swartz.

Flowers monœcious, apetalous, axillary. Calyx 5 – 6-parted. Stamens 3, monadelphous. Glands 5 – 6. Ovary 3-celled, with two ovules in each cell. Styles 3, 2-cleft. Capsule globose, of three 1-celled, 2-seeded, 2-valved carpels. — Smooth herbs, with 2-ranked leaves and branches. Flowers small, greenish.

1. **P. Carolinensis,** Walt. Annual; branches erect-spreading; leaves oblong, oval, or obovate, entire, short-petioled; flowers mostly by pairs, one sterile, the other fertile, on short nodding pedicels; calyx 6-parted, the lobes oblong, obtuse, strongly 1-nerved, membranous on the margins; capsule smooth; seed semicircular, 3-angled, striped with lines of minute raised points. — Low ground, Florida, and northward. Aug. – Sept. — Stem 8′ – 16′ high. Leaves ½′ – 1′ long.

2. **P. Niruri,** L. Annual? branches short, very slender, recurved; leaves crowded, oval (2″ – 4″ long); calyx 5-parted; seed white, smooth, 6-furrowed on the back and 3-furrowed on the sides; otherwise mostly like No. 1. — South Florida. — Stem 6′ high.

13. PACHYSANDRA, Michx.

Flowers monœcious, apetalous, spiked. Calyx bract-like, 4-parted. Sterile flowers numerous. Stamens 4, with club-shaped exserted filaments. Fertile flowers few, at the base of the sterile spike. Ovary 3-celled, with two ovules in each cell. Styles 3, thick, recurved. Capsule of three 1-celled, 2-seeded, 2-valved carpels. — A pubescent creeping perennial herb, with erect simple branches, bearing at the summit several large ovate toothed alternate abruptly long-petioled leaves, and near the base several thick bracted spikes.

1. **P. procumbens,** Michx. — West Florida, and westward, in rich shady woods. Feb. and March. — Flowering stems 1° high. Leaves 3′ – 4′ long, often discolored. Flowers odorous.

14. DRYPETES, Vahl.

Flowers diœcious, apetalous, in axillary clusters. Calyx 4 – 6-parted, lined in the centre with a wavy-lobed disk. Stamens 4 – 10, inserted under the disk: anther-cells distinct. Ovary resting upon the disk, 2-celled, the cells 2-ovuled. Styles 2, short, spreading. Fruit drupaceous, 1 – 2-celled, 1 – 2-seeded. — Tropical trees or shrubs, with alternate coriaceous entire smooth petioled leaves, and minute many-bracted flowers.

1. **D. crocea,** Poit. Branches smooth; leaves oblong, acute at each end, somewhat coriaceous, finely veined; clusters many-flowered, shorter than the petioles; calyx 4-parted, and like the ovary and slightly 4-angled 1-seeded drupe, tomentose; stamens 4, exserted; styles thick, obtuse. South Florida. — A small tree. Leaves 3′ – 4′ long, smooth and shining. Flowers greenish-white.

2. **D. glauca,** Vahl. Branches whitish, warty; leaves glaucous, oblong, obtuse or gland-pointed, coriaceous; clusters few-flowered, as long as the petioles; calyx 5-parted; stamens 10; drupes oval, tomentose. — South Florida, *Dr. Blodgett.* — Leaves 2′ – 3′ long.

Euphorbia Lathyrus and marginata, Dr. Curtis informs me, are naturalized in North Carolina, and Mercurialis annua is spontaneous around Charleston.

Order 120. EMPETRACEÆ. (Crowberry Family.)

Shrubs, with evergreen linear alternate or whorled leaves, without stipules, and small diœcious or polygamous flowers. — Calyx bract-like, of 2 – 3 sepals, imbricated. Corolla of 2 – 3 petals similar to the calyx, hypogynous. Stamens 2 – 3, alternate with the petals, exserted: anthers

2-celled, extrorse. Ovary 2 – 9-celled, the cells 1-ovuled. Style short or none: stigma lobed or incised. Drupe berry-like, globose, of 2 – 9 one-seeded nutlets. Seeds erect. Embryo in the axis of copious fleshy albumen.

1. CERATIOLA, Michx.

Calyx bracted, of two fringed sepals. Corolla 2-petalled. Stamens 2: anther-cells globose. Ovary resting on a fleshy disk, 2-celled, 2-ovuled. Style short: stigma many-cleft. Drupe 2-seeded. — A heath-like erect verticillately much branched shrub, with small linear shining whorled leaves, and axillary (whorled) reddish flowers.

1. **C. ericoides,** Michx. Dry barren sands, Florida to South Carolina. November. — Shrub 2° – 5° high, the young branches pubescent. Leaves 3 in a whorl, 4″ – 6″ long, the margins revolute. Petioles yellowish, appressed. Drupe yellowish, somewhat persistent.

ORDER 121. BATIDACEÆ. (BATIS FAMILY.)

Represented only by

1. BATIS, P. Browne.

Flowers dicœcious, in axillary fleshy conical spikes. Bracts of the sterile flowers round-cordate, persistent. Calyx cup-shaped, somewhat compressed, unequally 2-lipped. Petals 4, rhombic-ovate, clawed. Stamens 4, alternate with the petals, partly exserted: anthers oblong, introrse. Fertile flowers consolidated. Bracts deciduous. Calyx and corolla none. Ovary 4-celled, with a single erect anatropous ovule in each cell. Stigma sessile, broad, obscurely 2-lobed. Drupe 4-seeded. Seed oblong, without albumen. Cotyledons fleshy. Radicle inferior. — A smooth maritime shrub, with the habit of Salicornia. Leaves opposite, fleshy, club-shaped, semi-terete. Stipules none. Petals white.

1. **B. maritima,** L.— Salt marshes, Apalachicola, and southward. June – Sept. — Plant pale green, strong-scented. Stems prostrate, 2° – 3° long, the short branching flowering stems erect. Leaves 1′ long. Spikes 3″ – 5″ long.

ORDER 122. URTICACEÆ. (NETTLE FAMILY.)

Herbs, with watery juice, often armed with stinging hairs. Leaves undivided, stipulate. Flowers monœcious or dicœcious, apetalous, clustered, cymose, spiked, or panicled. — Calyx of the sterile flower 4 – 5-parted or 4 – 5-sepalous. Stamens as many as and opposite the sepals. Filaments inflexed in the bud, expanding elastically: anthers 2-celled, introrse. Calyx of the fertile flower 2 – 4-sepalous. Ovary sessile, free, 1-celled,

with a single erect orthotropous ovule. Stigma simple or tufted. Achenium commonly enclosed in the dry persistent calyx. Embryo straight, in the axis of fleshy albumen.

Synopsis.

* Plants armed with stinging hairs.

1. URTICA. Stamens 4. Stigma tufted. Achenium straight.
2. LAPORTEA. Stamens 5. Stigma subulate. Achenium oblique.

* * Plants destitute of stinging hairs.

+ Flowers in cymose clusters.

3. PILEA. Clusters naked. Calyx-lobes unequal. Leaves opposite.
4. PARIETARIA. Clusters involucrate. Calyx-lobes equal. Leaves alternate.

+ + Flowers in spiked clusters.

5. BŒHMERIA. Stigmas subulate, leaves opposite or alternate.

1. URTICA, Tourn. NETTLE.

Flowers monœcious or dicœcious. Calyx of the sterile flower 4-parted. Stamens 4, inserted around the abortive ovary. Calyx of the fertile flower 4-sepalous, unequal; the inner ones dilated in fruit, and enclosing the achenium. Stigma sessile, tufted. Achenium straight, ovate, smooth, compressed. — Herbs, with stinging hairs, opposite leaves, and greenish flowers, in panicled spikes or close clusters.

** Flowers in panicled or simple spikes.*

1. **U. gracilis,** Ait. Stem tall, 4-angled, smoothish, slender; leaves long-petioled, ovate-lanceolate, coarsely serrate, acute, rounded at the base, 3–5-nerved, smoothish, the petioles bristly; spikes very slender, loosely panicled. (U. procera, *Willd.*) — Low ground in the upper districts, and northward. July and Aug. ↳ — Stem 3°–4° high, mostly simple. Leaves thin, 4′–6′ long.

2. **U. dioica,** L. Hispid throughout; stem 4-angled, pubescent above, branching; leaves rather short-petioled, ovate, cordate, acuminate, coarsely serrate, pubescent beneath; spikes much branched; flowers often dicœcious. — Waste places. In Carolina, *Pursh.* Introduced. June–Aug. ↳ — Stem 2°–3° high. Leaves 3′–4′ long, thicker than in No. 1, and flowers larger.

3. **U. capitata,** Willd. Stem 4-angled, roughish; leaves large, long-petioled, rough, oblong-ovate, slightly cordate, coarsely serrate, 3-nerved; those on the branches alternate; spike solitary, leafy at the summit. — Wet shaded places, North and South Carolina, *Curtis, Elliott.* July and Aug. — Stem 3°–5° high.

** * Flowers in simple clusters shorter than the petioles.*

4. **U. urens,** L. Stem 4-angled, hairy; leaves ovate, coarsely serrate, 5-nerved, hairy; clusters by pairs in each axil, loose, peduncled. — Damp soil. Introduced. Dec.–Feb. ① — Stem 1° high.

5. **U. Chamædryoides,** Pursh. Stem smooth; leaves small, nearly sessile, ovate, coarsely serrate, hairy beneath, hairy and bristly above; clusters nearly sessile, globose, dense; calyx hairy. — St. Simon's Island, Georgia, *Elliott.* Feb. and March. — Stem 4′–6′ high.

2. LAPORTEA, Gaudich.

Flowers monœcious or dicœcious. Calyx of the sterile flowers 5-parted. Stamens 5, inserted around the abortive ovary. Calyx of the fertile flowers 4-sepalous, the 2 inner ones larger. Stigma subulate, hairy on one side. Achenium oblique, tubercular-roughened. — Herbs, with stinging hairs, alternate long-petioled serrate leaves, and minute flowers in spreading cymes.

1. **L. Canadensis,** Gaudich. Stem hispid; leaves ovate, acuminate, rounded or cordate at the base; the veins and petioles hispid; cymes very slender, single or by pairs, the upper mostly fertile, the lower sterile. (Urtica Canadensis and U. divaricata, *L.*) — Low shaded places, Florida, and northward. July and Aug. ♃ — Stem 2°–4° high.

3. PILEA, Lindl.

Flowers monœcious or dicœcious. Calyx of the sterile flower 3–4-parted. Stamens 3–4. Calyx of the fertile flowers 3-lobed, the lobes unequal or nearly equal, commonly with an inflexed scale-like sterile stamen at the base of each. Stigma sessile, tufted. Achenium ovate, compressed, straight. — Low herbs, destitute of stinging hairs. Leaves opposite, long-petioled. Flowers in axillary cymose clusters.

1. **P. pumila,** Gray. Stem angular, simple, smooth, pellucid; leaves membranaceous, ovate or elliptical, acuminate, coarsely serrate, 3-nerved, slightly hairy above; cymes much shorter than the petiole. (Urtica pumila, *L.*) — Wet shaded places, Florida, and northward. July–Sept. ① — Stem 6′–12′ high. Upper leaves 1′–2′ long, the lower not longer than the petiole.

2. **P. herniarioides,** Lindl. Stems erect or creeping, branched, tender, pellucid; leaves small, round-obovate, entire, opaque, transversely marked on the upper surface with white raised lines; clusters shorter than the petiole; flowers minute. — Shaded moist places, Key West. November. — Stems 2′–4′ long. Leaves 1″–2″ long, rather longer than the petiole. Achenium very minute, oblong, terete.

4. PARIETARIA, Tourn. PELLITORY.

Flowers polygamous, in axillary cymose clusters, supported by a bract-like involucre. Calyx of the sterile flowers 4–5-sepalous. Stamens 4–5, inserted around the abortive ovary. Calyx of the fertile flowers 4-parted. Stigma tufted. Ovary surrounded by four sterile, or sometimes perfect, stamens. Achenium ovoid. — Weak downy herbs, without stinging hairs. Leaves alternate, entire, long-petioled. Flowers minute, greenish.

1. **P. Pennsylvanica,** Muhl. Pubescent with straight hairs; stem simple or sparingly branched; leaves thin, oblong-lanceolate, obtuse, roughened with minute elevated dots; clusters dense; flowers shorter than the involucre. — Shaded rocks in the upper districts. May–July. ① — Stem 4′–12′ high. Leaves 6″–9″ long.

2. **P. debilis,** Forst. Pubescent with straight and hooked hairs intermixed; stem much branched, pellucid; leaves ovate, mostly acuminate, but obtuse, roughened with elevated dots; clusters loose, spreading; flowers as long as the involucre. (P. Floridana, *Nutt.*) — Damp shaded sandy soil near the coast, Florida to North Carolina. June – Aug. ① — Stem $\frac{1}{2}$° – 1$\frac{1}{2}$° long. Leaves 6″ – 9″ long, about the length of the slender petiole.

5. BŒHMERIA, Jacq. False-Nettle.

Flowers monœcious or dicœcious, in spiked clusters. Calyx of the sterile flowers 4 – 5-cleft. Stamens 4 – 5. Calyx of the fertile flowers tubular, 4 – 5-toothed or entire. Stigma subulate, hairy. Achenium elliptical, enclosed in the persistent calyx. — Rough herbs with alternate or opposite petioled leaves.

1. **B. cylindrica,** Willd. Pubescent and rough with straight and hooked hairs; leaves opposite and alternate, ovate and ovate-lanceolate, acuminate, serrate, rounded and 3-nerved at the base, on long or short petioles; spikes axillary, mostly leafy at the summit, the fertile ones compactly flowered, short; the sterile interrupted, and sometimes longer than the leaves. (B. lateriflora, *Muhl.*) — Swampy thickets, Florida, and northward. July – Sept. ♃ — Stem 1° – 3° high, mostly simple. Leaves 2′ – 5′ long.

Order 123. CANNABINACEÆ. (Hemp Family.)

Erect or twining herbs, with opposite incised or lobed and stipulate leaves, and dicœcious flowers. Sterile flowers racemose or panicled. Calyx 5-sepalous. Stamens 5, opposite the sepals, not inflexed in the bud. Fertile flowers in bracted spikes. Calyx 1-leaved, embracing the 1-celled ovary. Ovule solitary, erect. Stigmas 2, subulate, pubescent. Fruit indehiscent. Albumen none. Embryo coiled or curved.

1. HUMULUS, L. Hop.

Sterile flowers panicled. Fertile flowers in short axillary and solitary spikes. Bracts leafy, imbricated, 2-flowered, forming in fruit a membranaceous cone. Calyx enlarged in fruit. Embryo spirally coiled. — A rough perennial twining herb, with cordate 3 – 5-lobed leaves, and greenish-yellow flowers.

1. **H. Lupulus,** L. — Low grounds along the mountains, Georgia, and northward. June and July. — Stem 6° – 10° high. Leaves petioled, serrate. Achenium covered with resinous yellowish odorous grains.

Order 124. MORACEÆ. (Mulberry Family.)

Trees or shrubs, with milky juice, alternate leaves, with large deciduous stipules, and monœcious or dicœcious flowers, crowded in spikes or

heads, or enclosed in the fleshy receptacle. — Calyx of the sterile flowers 3 – 4-lobed. Stamens 3 – 4, inserted on the base of the calyx. Filaments inflexed in the bud, elastic. Calyx of the fertile flowers 3 – 5-sepalous. Ovary 1 – 2-celled, 1 – 2-ovuled. Styles 2. Achenium 1-seeded. Embryo curved, in fleshy albumen.

1. MORUS, Tourn. Mulberry.

Flowers monœcious, spiked; the sterile and fertile flowers in separate spikes. Calyx 4-parted. Stamens 4. Ovary 2-celled. Styles filiform. Achenium ovate, compressed, covered by the succulent berry-like calyx. — Trees, with rounded leaves, and axillary spikes.

1. **M. rubra,** L. Leaves cordate-ovate, acuminate, serrate, petioled, rough above, white tomentose beneath, on young shoots 3 – 5-lobed; stipules linear; sterile spikes slender, drooping; the fertile ones ovoid or oblong, resembling a blackberry in fruit. — Rich woods, Florida, and northward. March. — A small tree.

2. **M. alba,** L. Leaves cordate-ovate, acute, serrate, oblique at the base, smooth and shining, sometimes lobed; fruit whitish. — Around dwellings. Introduced. — A small tree.

2. FICUS, Tourn. Fig.

Flowers monœcious or dicœcious, lining the inside of the fleshy closed receptacle. Calyx of the sterile flowers 3-parted. Stamens 3. Calyx of the fertile flowers 5-cleft, pedicelled. Styles lateral, slender. Achenium fragile. Embryo hooked. — Trees or shrubs, with entire or lobed leaves, and large convolute stipules. Flowers axillary.

1. **F. aurea,** Nutt. Branches pale, smooth, furrowed; leaves smooth, coriaceous, oblong, entire, narrowed but obtuse at each end, stout-petioled; receptacle orange-yellow, globose, bracted, on short and thick pedicels. — South Florida. — A small tree. Leaves 3′ – 4′ long. Fruit about 4″ in diameter.

2. **F. pedunculata,** Willd. Branches terete, uneven; leaves ovate or oval, coriaceous, entire, smooth, obtuse, rounded or slightly cordate at the base, slender-petioled; receptacle yellowish, globose or obovate, slightly bracted, as long as the slender pedicels. — South Florida. — Tree 20° – 40° high, multiplying by means of aerial roots. Leaves 2′ – 2½′ long, 1½′ wide. Receptacle rather smaller than in No. 1.

3. **F. brevifolia,** Nutt. Branches smooth; leaves cordate-ovate, entire, obtuse, smooth, on short petioles; receptacle purplish-red, depressed-globose, single, short-peduncled, with 2-cleft bracts. — South Florida, *Dr. Blodgett.* — A small tree. Leaves 2′ long, with impressed veins.

F. Carica, L., is the commonly cultivated Fig.

Broussonetia papyrifera, Vent., the Paper Mulberry of our yards, belongs to this family.

Order 125. ULMACEÆ. (Elm Family.)

Trees, with watery juice, alternate undivided stipulate leaves, and perfect or polygamous apetalous flowers. — Calyx 4 – 9-lobed. Stamens 4 – 9, inserted on the base of the calyx, erect in the bud. Ovary 1 – 2-celled. Ovules solitary, suspended. Styles 2, spreading. Fruit membranaceous or drupaceous. Embryo straight or curved, without albumen. Cotyledons leafy.

Synopsis.

* Fruit dry. Anthers extrorse.

1. ULMUS. Flowers perfect. Ovary 2-celled. Fruit winged.
2. PLANERA. Flowers polygamous. Ovary 1-celled. Fruit wingless.

* * Fruit a drupe. Anthers introrse.

3. CELTIS. Flowers polygamous. Ovary 1-celled. Cotyledons curved.

1. ULMUS, L. Elm.

Flowers perfect. Calyx bell-shaped, 4 – 9-cleft. Stamens 4 – 9, slender, exserted : anthers extrorse. Ovary 2-celled. Styles short. Fruit 1-celled, 1-seeded, surrounded by a broad membranaceous wing. Embryo straight. — Trees. Leaves short-petioled, mostly oblique, doubly serrate, straight-veined. Stipules deciduous. Flowers greenish or purplish, clustered, appearing before the leaves.

1. **U. fulva,** Michx. (Slippery Elm.) Branchlets pubescent; leaves thick, ovate-oblong, acuminate, broadly serrate, slightly oblique at the base, very rough above, pubescent beneath; calyx and short pedicels pubescent; fruit orbicular, pubescent on the sides, smooth on the margins, with the obtuse teeth erect; expanding buds rusty-tomentose. — Rich woods, West Florida, and northward. Feb. and March. — A small tree. Leaves 4′ – 8′ long. Fruit 8″ – 9″ wide. Inner bark very mucilaginous.

2. **U. Floridana,** n. sp. Branchlets smooth; leaves thick, oblong-ovate, acute or slightly acuminate, broadly serrate, oblique at the base, smooth above, more or less pubescent beneath; pedicels very slender, somewhat racemose, and, like the calyx, smooth; fruit orbicular, fringed on the margins, with the short and broad teeth erect. — Banks of the Chipola River, at Marianna, West Florida. Feb. and March. — A tree 30° – 40° high, with brittle branches. Leaves 3′ – 4′ long. Fruit 2″ – 3″ in diameter. Bud-scales downy on the margins.

3. **U. Americana,** L. (Elm.) Branchlets and buds smooth; leaves thin, obovate-oblong, or oval, oblique at the base, sharply serrate, abruptly acuminate, smooth above, pubescent, or at length smooth beneath; pedicels clustered, slender, smooth, like the calyx; fruit oval or obovate, downy on the margins, with the sharp teeth connivent. — Low grounds, Florida, and northward. Feb. and March. — A large tree, with spreading branches. Leaves 2′ – 4′ long. Fruit 6″ long.

Var. ? **aspera.** Leaves larger (3′ – 6′) on shorter petioles, oval-oblong, acuminate, very oblique or half-cordate at the base, very rough above, pubescent

beneath; pedicels and calyx smaller. — Swamps of the Apalachicola River, Florida. Jan. and Feb. — A small tree.

4. **U. alata,** Michx. (WAHOO.) Branches corky-winged; leaves small, ovate-lanceolate, acute, sharply serrate, commonly even and rounded at the base, rough above, pubescent beneath, nearly sessile, flowers clustered, on slender pedicels; fruit oval, downy on the margins. — Rich soil, Florida to North Carolina. — A small tree. Leaves $1' - 1\frac{1}{2}'$ long.

2. PLANERA, Gmel. PLANER-TREE.

Flowers polygamous, clustered. Calyx bell-shaped, 4 – 5-cleft. Stamens 4 – 5: anthers extrorse. Ovary 1-celled. Styles short. Fruit nut-like, coriaceous, wingless. Embryo straight, without albumen. — Small trees, with the foliage of the Elm.

1. **P. aquatica,** Gmel. Leaves ovate, short-petioled, acute, serrate, roughish; flowers in small roundish clusters, appearing before the leaves; nut ovate, covered with warty scales. — River-swamps, Florida to North Carolina. Feb. and March. — A tree 20° – 30° high. Leaves $1' - 1\frac{1}{2}'$ long.

3. CELTIS, Tourn. NETTLE-TREE.

Flowers perfect or polygamous, apetalous. Calyx of five sepals. Stamens 5: anthers introrse. Ovary 1-celled. Styles 2, slender, pubescent. Drupe globose. Embryo curved around scanty gelatinous albumen. Cotyledons wrinkled. — Trees Leaves petioled, commonly oblique at the base. Flowers axillary, solitary, or few in a cluster, greenish.

1. **C. occidentalis,** L. Young leaves and branchlets silky; leaves (2′ long) ovate, acuminate, sharply serrate, abruptly contracted at the base, soon smooth, ferrugineous beneath; fertile flowers mostly solitary, on drooping peduncles; the sterile ones 2 – 4 in a cluster; drupe dark purple, with a thin sweet pulp. — Rich soil, Georgia, and northward. March. — A tree 40° – 60° high. — Var. INTEGRIFOLIA. (C. integrifolia, *Nutt.*) Leaves ovate or ovate-lanceolate ($2' - 3'$ long), acuminate, entire, rounded, or the lower ones cordate at the base, roughened with minute elevated points. — Sandy soil, Apalachicola, Florida (perhaps introduced), and westward. — A small tree. Branches and leaves 2-ranked. — Var. PUMILA. (C. pumila, *Pursh.*) Shrubby; leaves ($1' - 1\frac{1}{2}'$ long) ovate, acute, serrate, obtuse at the base, pale beneath, very rough above; drupe glaucous. — Shady woods, Florida to North Carolina. March and April. —Stem 5° – 10° high.

ORDER 126. PLATANACEÆ. (PLANE-TREE FAMILY.)

Large trees, with alternate palmately-lobed petioled stipulate leaves, and monœcious flowers, in axillary long-peduncled globose heads. — Calyx and corolla none. Anthers on short club-shaped filaments, numerous,

2-celled, adnate to the truncated connective. Ovaries numerous, obconical, hairy at the base. Ovules 1 – 2, orthotropous, pendulous. Style subulate. Nut 1-seeded. Seed cylindrical. Embryo in the axis of scarce fleshy albumen. — Flowers intermixed with copious club-shaped scales. — Consisting of the single genus.

1. PLATANUS, L. PLANE-TREE. SYCAMORE.

1. **P. occidentalis,** L. — Leaves (4′ – 9′ wide) round-cordate, angularly lobed and toothed, covered when young with dense whitish down, soon smooth; stipules toothed; heads pendulous (8″ – 12″ in diameter). — River-banks, Florida, and northward. March and April. — A large tree, with the white bark separating in thin plates.

ORDER 127. JUGLANDACEÆ. (WALNUT FAMILY.)

Trees, with alternate odd-pinnate exstipulate leaves and monœcious apetalous or minutely petalled flowers. Sterile flowers in pendulous aments. Calyx 2 – 6-parted, the stamens few or numerous. Fertile flowers single or clustered. Calyx 3 – 5-parted, the tube adherent to the incompletely 2 – 4-celled ovary. Fruit drupaceous, with a bony endocarp. Seed 4-lobed, without albumen, orthotropous. Cotyledons oily, 2-lobed. Radicle short, superior.

1. CARYA, Nutt. HICKORY. PIGNUT.

Aments of the sterile flowers mostly three together, on a common peduncle, lateral. Calyx unequally 3-parted. Stamens 3 – 6. Fertile flowers terminal. Calyx 4-parted. Petals none. Stigma large, 4-lobed. Nut smooth, 4 – 6-angled, incompletely 4-celled; the coriaceous epicarp (husk) partly or completely 4-valved. — Trees, mostly with scaly buds. Leaflets serrate. Fruit roundish.

** Epicarp very thick, 4-valved: seed thick, edible.*

1. **C. alba,** Nutt. (SHELL-BARK HICKORY.) Leaflets 5 – 7 (mostly 5), lanceolate-oblong, or the upper ones obovate-oblong, acuminate, pubescent beneath; fruit depressed-globose; nut roundish, thin-shelled, compressed, 4-angled, slightly pointed. — Rich woods in the upper districts, Georgia, and northward. March and April. — A large tree, with shaggy and scaly bark.

2. **C. sulcata,** Nutt. Leaflets 7 – 9, obovate-oblong, acuminate, pubescent beneath; fruit oval, 4-angled above; nut oblong, thick-shelled, conspicuously pointed, slightly compressed. — Rich woods in the upper districts of Carolina, *Elliott*, and northward. March and April. — A large tree, with scaly bark.

3. **C. olivæformis,** Nutt. (PECAN-NUT.) Leaflets 13 – 15, lanceolate-oblong, serrate falcate, acuminate; nut olive-shaped, smooth, thin-shelled, somewhat 4-angled. — River-bottoms, Mississippi, northward and westward. — A large tree with smoothish bark.

** *Epicarp partly 4-valved: seed thin: bark not scaly.*

4. **C. tomentosa,** Nutt. (HICKORY.) Leaflets 7 – 9 (mostly 7), large, oblong-obovate, acute, pubescent beneath; sterile aments tomentose; fruit large, globose; epicarp thick, coriaceous, parted nearly to the base; nut thick-shelled, oval, somewhat 6-angled. — Rich soil, Florida, and northward. March and April. — A large tree with rough bark.

5. **C. glabra,** Torr. (PIG-NUT.) Leaflets 5 – 7 (mostly 7), ovate-lanceolate, acuminate, smooth; fruit obovate, obcordate, or pear-shaped; epicarp thin, parted to the middle, coriaceous; nut thick-shelled, sometimes angled. (C. porcina, *Nutt.*) — Woods, Florida, and northward. March and April. — A large tree with smoothish bark.

6. **C. microcarpa,** Nutt. Leaflets 5 – 7, oblong-lanceolate, smooth, glandular beneath, acuminate; aments smooth; fruit roundish; epicarp thin; nut thin-shelled, slightly 4-angled. — Mountains of North Carolina, and northward. April and May. — A large tree. Fruit ¾′ in diameter.

7. **C. myristicæformis,** Michx. "Leaflets 5, ovate-lanceolate, acuminate, smooth, the terminal one sessile; fruit oval, rugose, rough; nut oval, slightly acuminate, furrowed, very hard." — South Carolina, at Goose Creek, *Michaux.* Berkeley District, *Ravenel.* Nuts resembling nutmegs.

8. **C. amara,** Nutt. (BITTER-NUT.) Leaflets 9 – 11, oblong-lanceolate, acute, smoothish; fruit globular; epicarp thin, parted to the middle; nut thin-shelled, obcordate; seed much wrinkled. — Low ground, Florida, and northward. March and April. — A tree of moderate dimensions, with smooth bark, and very bitter and astringent seeds.

9. **C. aquatica,** Nutt. Leaflets 9 – 13, lanceolate, acuminate, slightly serrate, smooth; fruit roundish, 4-ribbed; epicarp thin, 4-parted to the base; nut compressed, thin-shelled, 4-angled; seed much wrinkled. — River-swamps, Florida to South Carolina. March and April. — A small tree with rough bark. Seeds very bitter and astringent.

2. JUGLANS, L. WALNUT. BUTTERNUT.

Sterile aments lateral, solitary. Calyx 5 – 6-parted. Stamens numerous. Fertile flowers terminal. Calyx 4-cleft. Petals 4, minute. Stigmas 2, long, recurved. Fruit oblong or globose. Epicarp indehiscent. Nut incompletely 4-celled, furrowed or sculptured. — Trees with naked buds. Leaflets serrate.

1. **J. nigra,** L. (BLACK WALNUT.) Leaflets 11 – 21, ovate-lanceolate, pubescent beneath, acuminate, slightly cordate at the base, or oblique; fruit globose, rough-dotted; nut furrowed. — Rich woods, Florida, and northward. March and April. — A tree 30° – 50° high.

2. **J. cinerea,** L. (BUTTERNUT.) Leaflets 15 – 19, ovate-lanceolate, acute, rounded at the base, pubescent; the petioles, fruit, &c. viscid; fruit oblong; nut deeply sculptured, acute. — Rocky woods in the upper districts. March and April. — A tree 30° – 40° high.

Order 128. CUPULIFERÆ. (Oak Family.)

Trees or shrubs, with alternate entire or lobed straight-veined stipulate leaves, and monœcious apetalous flowers. Sterile flowers in pendulous slender or capitate aments. Calyx scale-like, or regular and 4 – 6-lobed. Stamens few. Fertile flowers single or clustered, furnished with an involucre which encloses the fruit, or forms a cup at its base. Ovary 2 – 7-celled, with 1 – 2 pendulous anatropous ovules in each cell. Stigmas as many as the cells. Fruit 1-celled, 1-seeded. Albumen none. Cotyledons thick and fleshy. Radicle superior.

Synopsis.

* Fertile flowers single, or few in a cluster.

1. QUERCUS. Nut solitary, with the base enclosed in a scaly involucre.
2. CASTANEA. Nuts 1 – 3, enclosed in a 4-valved spiny involucre; sterile aments elongated, erect.
3. FAGUS. Nuts 2, 3-angled, enclosed in a somewhat spiny 4-valved involucre: sterile aments capitate, pendulous.
4. CORYLUS. Nut solitary, bony, enclosed in a leafy lacerated involucre.

* * Fertile flowers spiked.

5. CARPINUS. Nuts 1 – 2, in the axil of an open leafy involucre.
6. OSTRYA. Nut solitary, enclosed in a membranaceous inflated involucre.

1. QUERCUS, L. Oak.

Sterile ament slender, bractless, pendulous. Calyx unequally 6 – 8-parted. Stamens 6 – 12, slender: anthers 2-celled. Fertile flowers axillary, solitary, or few in a cluster. Calyx 6-cleft or denticulate, adnate to the 3 – 4-celled ovary. Ovules 2 in each cell. Stigmas obtuse. Nut (*Acorn*) oblong or hemispherical, partly (rarely wholly) enclosed in the cup-shaped scaly involucre. Cotyledons very thick, plano-convex. — Trees or shrubs, with simple entire or lobed leaves. Stipules caducous.

§ 1. *Fruit biennial.*

* *Leaves entire, short-petioled; those on vigorous shoots often lobed or toothed.*

1. **Q. Phellos,** L. (Willow-Oak.) Leaves (2′ – 3′ long) lanceolate or linear-lanceolate, bristle-awned, scurfy, like the branchlets, when young, becoming smooth on both sides; fruit small, sessile; cup flattish, enclosing the base of the hemispherical nut. — Margins of swamps and streams, Florida to Mississippi, and northward. — A slender tree, 40° – 50° high.

Var. **laurifolia.** (Q. laurifolia, *Michx.*) Leaves larger (3′ – 4′ long), oblong-lanceolate; cup deeper and more pointed at the base. — Light uplands, Florida to North Carolina. — A tree commonly larger than the preceding.

Var. **arenaria.** (Q. myrtifolia, *Willd.?*) Shrubby (4° – 8° high); leaves small (½′ – 1½′ long), rigid, oblong or obovate, obtuse or barely pointed, with the margins revolute. — Dry sand ridges, along the coast of Florida and Georgia.

2. **Q. imbricaria,** Michx. (Shingle-Oak.) Leaves lanceolate-oblong, acute or obtuse at each end, mucronate, pale and downy beneath, deciduous;

fruit middle-sized; cup narrowed at the base, enclosing one half or one third of the nearly hemispherical nut, the broad and whitish scales closely appressed. — Mountains of North Carolina, and northward. — A tree 40° – 50° high. Leaves 3′ – 5′ long.

3. **Q. cinerea,** Michx. (HIGH-GROUND WILLOW-OAK.) Leaves perennial, oblong-lanceolate, obtuse or acute, mucronate, white tomentose beneath; fruit small, sessile; cup shallow, narrowed at the base, pale, enclosing one third of the hemispherical nut. — Dry sandy pine barrens, Florida to North Carolina. — A small tree, fruiting abundantly. Leaves 2′ – 3′ long, scurfy, like the branchlets, when young.

Var. **pumila,** Michx. (Q. pumila, *Walt.*) Shrubby (1° – 3° high); branches slender; leaves lanceolate, wavy, at length smooth on both surfaces. — Flat or dry pine barrens, Florida to North Carolina. — Roots creeping.

4. **Q. virens,** Ait. (LIVE OAK.) Branchlets tomentose; leaves coriaceous, perennial, oblong, obtuse, somewhat rugose, smooth and shining above, hoary-tomentose beneath, the margins revolute; fruit long-peduncled; cup top-shaped, hoary, enclosing the base of the oblong chestnut-brown nut. — Dry or wet soil, in the lower districts, Florida to North Carolina. — Commonly a large tree with spreading branches. Leaves 2′ – 4′ long.

Var. **maritima.** (Q maritima, *Willd.*) Shrubby (4° – 10° high); leaves smooth, lanceolate, concave, mostly acute; fruit larger. — Sand ridges along the coast, Florida to South Carolina.

Var. **dentata.** (Q. nana, *Willd.*?) Dwarf (1° – 2° high); earliest leaves flat, wedge-obovate or obovate-oblong, mucronate, toothed, at length smooth, the others lanceolate and entire; fruit sessile or short-peduncled, often clustered. — Flat pine barrens, Florida. — Leaves nearly sessile.

** * Leaves 3-lobed at the summit, bristle-awned.*

5. **Q. aquatica,** Catesb. (WATER-OAK.) Leaves perennial, short-petioled, obovate-oblong or wedge-shaped, smooth on both sides, obtusely 3-lobed at the summit, often entire, or on young shoots pinnatifid-toothed or lobed, mostly awnless when old; fruit small, mostly sessile; cup shallow, flat, enclosing the base of the hemispherical downy nut. — Swamps and wet banks, Florida, and northward. — A small tree, with smooth bark. Leaves 2′ – 3′ long, with tufts of down in the axils of the veins when young.

Var. **hybrida.** Smooth, with ash-colored branchlets; leaves oblong or wedge-oblong, entire, emarginate, or 3-lobed at the summit, tapering or abruptly contracted into a short petiole; fruit very small, closely sessile; cup shallow, flattened, enclosing the base of the ovate nut. — Rocky banks of Schurlock's Spring, West Florida, and of the Flint River at Albany, Georgia. — A lofty tree. Leaves 3′ – 4′ long. Fruit 4″ – 5″ long.

6. **Q. nigra,** L. (BLACK JACK.) Leaves short-petioled, coriaceous, broadly wedge-shaped, rounded at the base, mostly 3-lobed at the summit, bristle-awned, smooth above, rusty-pubescent beneath, deciduous; fruit middle-sized, on short and thick peduncles; cup top-shaped, with coarse truncate scales, enclosing one third or one half of the oblong-ovate nut. (Q. ferruginea, *Michx.*)

— Dry gravelly or sandy soil, Florida to Mississippi, and northward. — A small tree. Leaves 4′ – 9′ long. Intermediate forms between this and No. 7 are not uncommon.

* * * *Leaves long-petioled, sinuate-pinnatifid, bristle-awned, deciduous.*

+– *Leaves smooth or nearly so.*

7. **Q. Catesbæi,** Michx. (TURKEY-OAK.) Leaves somewhat coriaceous, broad, narrowed into a short petiole, deeply pinnatifid; the lobes very acute from a broad base, spreading, mostly falcate and entire; fruit rather large, short-peduncled; cup thick, turbinate, with broad obtuse scales, enclosing half of the ovoid nut; the upper scales inflexed and lining the inner edge of the cup. — Dry pine barrens, Florida to North Carolina. — A small tree. Leaves 6′ – 9′ long.

8. **Q. tinctoria,** Bartr. (BLACK OAK.) Leaves obovate-oblong, with deep or shallow open sinuses, and about 6 sharply-toothed lobes, obtuse or truncate at the base, pubescent when young, at length only in the axils of the veins beneath; cup top-shaped, with broad scales, enclosing about half of the roundish depressed nut. (Q. discolor, *Ait.*) — Dry woods, chiefly in the upper districts, and northward. — A large tree, with the outer bark dark-brown, the inner thick and yellow. Leaves turning light-brown after frost. Nuts 6″ – 8″ long.

9. **Q. coccinea,** Wang. (SCARLET OAK.) Leaves long-petioled, oval or oblong, with deep and broad sinuses, and 6 – 8 entire or sparingly toothed lobes, truncate at the base, smooth and shining on both sides; cup top-shaped, with coarse scales, enclosing one half or one third of the ovoid nut. — Dry woods, Florida, and northward; more abundant in the upper districts. — A large tree, not easily distinguished from the preceding, and probably only a form of it. Leaves turning bright scarlet after frost.

10. **Q. rubra,** L. (RED OAK.) Leaves oblong, with open shallow sinuses, and 8 – 12 entire or sharply toothed lobes, smooth on both sides, paler beneath; fruit large, cup shallow, flat, with fine scales, enclosing the base of the ovate or oblong nut. — Rocky woods, Florida, and northward. — A large tree. Leaves turning dark red after frost Nut 1′ long.

11. **Q. Georgiana,** M. A. Curtis. Shrubby; leaves small, very smooth, somewhat obovate, wedge-shaped at the base, with deep or shallow open sinuses, and 3 – 5 triangular-lanceolate entire acute or obtuse lobes; fruit short-peduncled; cup smooth and shining, saucer-shaped, enclosing one third of the oval-globose nut. — Stone Mountain, Georgia, *Ravenel.* — Shrub 6° – 8° high, growing in clusters. Leaves 3′ – 4′ long. Fruit abundant. Nut $\frac{1}{2}$′ long.

+– +– *Leaves tomentose beneath.*

12. **Q. falcata,** Michx. (SPANISH OAK.) Leaves oblong, rounded at the base, 3 – 5-lobed; the lobes entire or sparingly toothed at the apex, the terminal one commonly narrow and elongated; fruit rather small; cup somewhat top-shaped, with coarse scales, enclosing half of the globular nut. — Var. PAGODÆFOLIA, *Ell.*, has larger leaves, with 11 – 13 nearly opposite and spreading lobes. — Dry woods, Florida, and northward. — A large tree. Leaves 4′ – 5′ long, entire near the base. Nut $\frac{1}{2}$′ long.

13. **Q. ilicifolia,** Wang. (BEAR-OAK.) Shrubby; leaves obovate, with 3-5 angular or short and broad mostly entire lobes, acute at the base, white-tomentose, like the branchlets, when young, at length smooth and dark green above; fruit short-peduncled; cup shallow, saucer-shaped, with coarse scales, enclosing about one third of the ovate nut. (Q. Banisteri, *Michx.*) — Barren soil in the upper districts, Georgia, and northward. — A shrub 3°-4° high. Leaves 3′-5′ long. Fruit abundant.

§ 2. *Fruit annual: leaves awnless, deciduous.*

* *Leaves sinuate-lobed.*

14. **Q. obtusiloba,** Michx. (POST-OAK.) Leaves with 5-7 broad rounded or notched lobes separated by wide open sinuses, narrowed at the base into a short petiole, pubescent beneath; cup hemispherical, enclosing one third or one half of the oval nut. — Cold clayey soil, Florida, and northward. — A tree 40°-50° high. Nut ½′ long. Leaves 4′-6′ long.

Var. **parvifolia.** Leaves smaller (1½′-3′ long), oblong, obtuse, entire or sinuate-toothed, nearly smooth on both sides, rusty-pubescent, like the branchlets, when young; nut larger. — Sand-ridges near the coast, West Florida. — A shrub or small tree.

15. **Q. alba,** L. (WHITE OAK.) Leaves oblong or obovate-oblong, with 7-9 mostly obtuse and entire narrow lobes separated by narrow sinuses, narrowed into a petiole, densely tomentose, like the branchlets, when young, at length smooth or glaucous beneath; fruit large, nearly sessile; cup hemispherical, enclosing one third of the oblong-ovate nut. — Damp woods, Florida to Mississippi, and northward. — A large tree with white bark. Leaves 4′-6′ long. Nut about 1′ long.

16. **Q. macrocarpa,** Michx. (MOSSY-CUP OAK.) Leaves thin, obovate-oblong, pubescent or pale beneath, acute at the base, short-petioled, slightly or strongly few-many-lobed; the lobes rounded, entire or obtusely toothed; fruit large; scales of the cup thick, the upper ones produced into long awns; nut ovoid, included, or half enclosed in the cup. — Woods and river-banks, North Carolina, and northward. — A middle-sized tree. Leaves 6′-15′ long. Nut 1′-1½′ long.

17. **Q. lyrata,** Walt. (OVER-CUP OAK.) Leaves crowded at the end of the branchlets, obovate-oblong, acute at the base, 7-9-lobed, white-tomentose beneath, or at length smoothish, shining above, the lobes triangular, acute, and entire; fruit sessile; cup round-ovate, with rugged scales, almost covering the roundish nut. — River-swamps, Florida to North Carolina. — A large tree. Leaves 5′-8′ long, short-petioled. Fruit 1′ long.

** *Leaves toothed.*

18. **Q. Prinus,** L. (SWAMP CHESTNUT-OAK.) Leaves oblong or obovate-oblong, obtuse, with rounded teeth, smooth and shining above, pale and pubescent beneath, acute at the base, short-petioled; fruit large, short-peduncled; cup hemispherical, rugged with tubercular scales, enclosing the base of the roundish or oblong-ovate nut. — Low grounds, Florida to Mississippi, and northward. — A large tree. Nut about 1′ long.

Var. **monticola,** Michx. (ROCK CHESTNUT-OAK.) (Q. montana, *Willd.*) A smaller tree (30° – 40° high), with more compact and durable wood; fruit smaller; nut oblong. — Rocky woods along the mountains.

Var. **Michauxii.** (Q. Michauxii, *Nutt.*) Leaves smaller (4′ – 5′ long), rather rigid, velvety beneath, often obtuse or slightly cordate at the base; nut ovate (1½′ long). — Low ground, Florida to South Carolina. — A large tree.

Var. **discolor,** Michx. Leaves obovate, acute at the base, coarsely and obtusely toothed or somewhat lobed, dark-green above, white-tomentose beneath; fruit long-peduncled, tubercular, hemispherical; nut oblong-ovate (1′ long). (Q. bicolor, *Willd.*) — Swamps along the mountains. — A large tree.

19. **Q. Castanea,** Willd. (CHESTNUT-OAK.) Leaves oblong, varying to lanceolate, acuminate, sharply toothed, with the points incurved, mostly acute at the base, smooth above, paler and minutely pubescent or glaucous beneath; fruit small, sessile or short-peduncled; cup hemispherical, with flat scales, enclosing one third of the oblong nut. — Rocky woods, West Florida to Mississippi, and northward. — A large or middle-sized tree. Leaves 3′ – 6′ long. Nut 7″ – 9″ long.

20. **Q. prinoides,** Willd. (CHINQUAPIN-OAK.) Shrubby; leaves lanceolate-oblong, acute at each end, acutely toothed, smooth above, white-tomentose beneath; fruit small, mostly sessile; cup hemispherical, with flat scales, enclosing about one half of the round-ovate nut. (Q. Chinquapin, *Pursh.*) — Barren soil in the upper districts, and northward. — Shrub 2° – 6° high. Leaves 3′ – 4′ long. Nut 8″ – 9″ long.

2. CASTANEA, Tourn. CHESTNUT.

Sterile flowers in separate clusters, in long erect cylindrical aments. Calyx 5 – 6-parted. Stamens 8 – 15: anthers 2-celled. Fertile flowers 1 – 3, enclosed in the bell-shaped, at length globose, 4-valved and very prickly involucre. Calyx 5 – 6-lobed, superior. Abortive stamens 5 – 12. Ovary 3 – 6-celled. Ovules single or by pairs in each cell. Stigmas 3 – 6, bristle-like, spreading. Nuts 1 – 3, roundish, compressed, or plano-convex. Cotyledons very thick. — Trees or shrubs, with oblong petioled sharply-serrate straight-veined leaves.

1. **C. vesca,** L. (CHESTNUT.) Leaves oblong-lanceolate, acuminate, coarsely serrate, smooth on both sides; nuts mostly 3, the middle one flattened, the 2 outer ones plano-convex, dark brown. — Dry woods, West Florida, and northward. April. — A large tree. Leaves 6′ – 7′ long.

2. **C. pumila,** Michx. (CHINQUAPIN.) Leaves oblong, acute, or obtuse, finely serrate, hoary-tomentose beneath; nuts solitary, nearly globular. (C. nana, *Muhl.*, a form with larger leaves and nuts.) — Dry sandy soil, Florida, and northward. April – May. — A large shrub or small tree. Leaves, involucre, and nut smaller than those of the preceding.

3. FAGUS, Tourn. BEECH.

Sterile flowers capitate, on long and drooping peduncles, with deciduous bracts. Calyx bell-shaped, 5 – 6-cleft. Stamens 8 – 12: anthers 2-celled. Fertile flow-

ers solitary or by pairs, peduncled, surrounded with numerous linear bracts and a 4-lobed involucre. Calyx of 4 – 5 subulate lobes. Ovary 3-celled, with two ovules in each cell. Styles 3, filiform. Nuts commonly 2, acutely 3-angled, enclosed in the soft-spiny 4-valved involucre. Cotyledons thick and fleshy. — Trees, with whitish bark, and straight-veined leaves expanding with the flowers.

1. **F. ferruginea,** Ait. Leaves oblong-ovate or rhombic, acute, finely serrate, silky on both sides when young, when old only on the veins beneath; spines of the involucre short, recurved. — Damp sandy soil, Florida, and northward. April. — A large tree, with widely spreading branches.

4. CORYLUS, Tourn. Hazel-nut.

Sterile flowers in cylindrical pendulous bracted aments. Calyx 2-cleft, partly united with the bract. Stamens 8 : anthers 1-celled. Fertile flowers clustered. Ovary 2-celled, 2-ovuled. Stigmas 2, filiform. Involucre tubular at the base, leafy and lacerated at the summit, enclosing a single bony (edible) nut. — Shrubs, with broadly cordate doubly serrate petioled leaves. Flowers appearing before the leaves.

1. **C. Americana,** Walt. (Hazel-nut.) Branchlets glandular; leaves round-cordate, coarsely serrate, acuminate, pubescent; involucre roundish at the base, dilated and flattened above the nut, glandular hairy; nut roundish, somewhat flattened. — Rich soil along the margins of woods and thickets, West Florida, and northward. Feb. and March. — Shrub 5° – 6° high, tough and flexible. Leaves 4′ – 6′ long.

2. **C. rostrata,** Ait. (Beaked Hazel-nut.) Branchlets smooth; leaves ovate or oblong-ovate, slightly cordate, acuminate, finely serrate, rather thin, pubescent; involucre bristly, prolonged into a tube above the nut, 2-cleft and toothed at the summit; fruit nearly globular. — Rich soil in the upper districts, and northward. March – April. — Shrub 4° – 6° high.

5. CARPINUS, L. Hornbeam.

Flowers destitute of floral envelopes, supported by scale-like bracts. Sterile flowers in drooping cylindrical aments. Stamens 8 – 14 : filaments short : anthers 1-celled, hairy at the apex. Fertile flowers spiked. Bracts 2-flowered, deciduous. Ovary 2-celled, 2-ovuled. Stigmas 2, filiform. Nut solitary, angular, sessile in the axil of an open 3-lobed leaf-like involucre. — Trees, with simple ovate or oblong straight-veined deciduous leaves, folded in the bud. Flowers expanding before the leaves.

1. **C. Americana,** Michx. (Hornbeam.) Branchlets smooth and slender; leaves oblong-ovate, acute or slightly acuminate, sharply and doubly serrate, rounded at the base, more or less pubescent. Fertile spikes terminal, long-peduncled, 6 – 12-flowered; involucre unequally 3-lobed, the middle lobe longer and serrate on one side; nut small, ovate, compressed, 8-ribbed. — Rich woods, Florida, and northward. March. — A small tree, with hard and close-grained wood.

6. OSTRYA, Micheli. Hop-Hornbeam.

Sterile flowers in drooping cylindrical aments, each in the axil of a scale-like bract, destitute of a calyx. Stamens with the filaments irregularly united. Fertile flowers in a short terminal crowded spike, each enclosed in a membranaceous involucre. Ovary 2-celled, 2-ovuled, bearded at the apex. Stigmas 2, filiform. Fruiting involucre inflated, nerved, hairy or bristly at the base, enclosing the solitary pointed nut. — Small trees, with ovate or oblong serrate short-petioled deciduous leaves. Flowers appearing with the leaves.

1. **O. Virginica,** Willd. (Hop-Hornbeam.) Leaves ovate-oblong, sharply and simply serrate, acuminate, rounded or slightly cordate at the base, pubescent; fertile spike cone-like, short-peduncled; the imbricated involucres oblong, mucronate, bristly at the base. — Rich woods, Florida, and northward. March. — A small tree, with hard and close-grained wood.

Order 129. MYRICACEÆ. (Wax-Myrtle Family.)

Chiefly shrubs, with simple alternate leaves, with or without stipules, and monœcious or diœcious flowers, disposed in aments, destitute of calyx or corolla, each in the axil of a simple bract. Stamens 2 – 10; the short filaments free or partly united: anthers 2-celled. Ovary solitary, 1-celled, surrounded at the base with a row of scales. Ovule solitary, orthotropous or amphitropous. Involucre none. Stigmas 1 – 2, elongated. Fruit a dry 1-seeded drupe. Albumen none. Cotyledons fleshy. Radicle superior.

Synopsis.

* Seed orthotropous. Plants dotted with resinous glands.

1. MYRICA. Flowers diœcious. Filaments united below. Leaves serrate or entire. Stipules none.
2. COMPTONIA. Flowers monœcious. Filaments forking. Leaves pinnatifid. Stipules half-cordate.

* * Seed amphitropous. Plant destitute of glands.

3. LEITNERIA. Flowers diœcious. Filaments distinct. Stigma solitary. Leaves entire. Stipules none.

1. MYRICA, L. Wax-Myrtle. Bayberry.

Flowers in short axillary aments, diœcious, each in the axil of a scale-like bract. Calyx and corolla none. Stamens 2 – 10, with the filaments united below. Ovary enclosed in a cup of 3 – 5 rounded scales. Ovule orthotropous. Stigmas 2 (rarely 4), flattened on the inner face, widely spreading. Nut globose, covered with waxy grains. — Shrubs or small trees, dotted with minute resinous and odorous glands. Branches clustered. Leaves short-petioled, serrate or entire. Stipules none.

1. **M. cerifera,** L. (Wax-Myrtle. Bayberry.) Branchlets pubescent; leaves lanceolate or oblong-lanceolate, mostly obtuse, entire, or with a few sharp

serratures near the apex, smooth, or pubescent on the veins beneath, tapering into a petiole; sterile aments very numerous, oblong; bracts wedge-shaped; stamens 4; fertile aments small; bracts rounded, obscurely 3-lobed; scales of the ovary 4, ciliate; stigmas 2; fruit abundant, white. — Margins of swamps, mostly near the coast, Florida, and northward. March and April. — A shrub or small tree. Leaves persistent along our southern limits, but northwardly deciduous, $1\frac{1}{2}' - 4'$ long.

Var. **media,** Michx. Branchlets smooth or hairy; leaves larger, obovate-oblong, entire, or slightly serrate near the apex, mostly rounded or emarginate at the summit; aments and nuts larger; scales of the sterile flower roundish. — Wet pine barrens. — Shrub $2° - 4°$ high. Leaves mostly deciduous.

Var. **pumila,** Michx. Low ($1° - 2°$ high), much branched; leaves smaller ($\frac{1}{2}' - 2'$ long), persistent, varying from wedge-obovate to wedge-lanceolate or linear-spatulate, coriaceous, obtuse, mostly toothed near the apex; aments minute, ovoid, few-flowered. — Sandy pine barrens.

2. **M. inodora,** Bartr. Smooth; leaves perennial, coriaceous, oblong, obtuse, very entire, tapering into a petiole, with the margins revolute; sterile aments oval or oblong, with the roundish bracts transversely ridged on the back; stamens about 10, monadelphous; fertile aments small, elongated in fruit; stigmas 2 or 4; scales of the ovary 5; nuts large, black, commonly solitary. — Margins of pine-barren ponds and swamps, Florida, common near the coast. Feb. – March. — A shrub or small tree, with whitish bark. Leaves about 2′ long, sparingly dotted. Nuts ovoid, 3″ long.

2. COMPTONIA, Solander. SWEET-FERN.

Flowers monœcious. Sterile ament cylindrical, with kidney-shaped acuminate bracts. Stamens 3, forked. Fertile ament globular, bur-like. Ovary surrounded by 5 – 6 long and slender persistent scales; ovule orthotropous. Stigmas 2, spreading. Nut ovoid-oblong, smooth. — Low shrubs, with narrow pinnatifid leaves, and small semicordate stipules.

1. **C. asplenifolia,** Ait. Leaves thin, short-petioled, linear-lanceolate, with numerous rounded lobes, deciduous; fertile aments at the base of the sterile, appearing before the leaves. — Dry woods, North Carolina, and northward. April. — Plant $1° - 2°$ high, aromatic when bruised. Leaves $3' - 4'$ long, resembling those of a fern.

3. LEITNERIA, N. Gen.

Flowers in aments, dicecious, each in the axil of a scale-like bract. Calyx and corolla none. Sterile ament many-flowered, cylindrical, elongated; bracts ovate, acuminate, imbricated, staminiferous at the base, hairy, the lower ones empty; stamens 5 – 10, free: anthers 2-celled, introrse. Fertile ament few – many-flowered, narrowly cylindrical, short, in fruit elongated; bracts ovate, approximate, at length scattered, the lower ones empty. Ovary ovoid, nearly smooth, with the base surrounded by a cup of 4 minute ovate toothed scales. Ovule solitary, amphitropous. Stigma solitary, thick, elongated, channelled.

Drupe oblong, obtuse, narrowed at the base: epicarp thick, coriaceous, smooth: endocarp crustaceous. Albumen none. Embryo large, filling the cell. Cotyledons oval, compressed. Radicle superior. — A stout shrub, 2° – 6° high, with soft wood and smooth light-brown bark, without resinous dots. Branches short and thick, hoary-pubescent when young. Leaves oblong or obovate-oblong (4′ – 6′ long), acute at each end, entire, smooth and shining above, hoary-tomentose beneath, straight-veined, on long spreading or recurved hoary petioles, deciduous. Stipules none. Aments developed before the leaves, from the axils of the preceding year, the sterile ones 1′ – 1½′ long, the fertile 6″ – 8″ long. Drupe ½′ long, green, slightly curved.

1. **L. Floridana.** — Salt or brackish marshes, Apalachicola, Florida. — Feb. and March.

Order 130. BETULACEÆ. (Birch Family.)

Trees or shrubs, with alternate simple straight-veined leaves, deciduous stipules, and monœcious amentaceous flowers, placed 2 – 3 together in the axil of a 3-lobed bract. Stamens 4: filaments distinct. Ovary 2-celled, with a single suspended anatropous ovule in each cell. Stigmas 2, elongated. Fruit a winged or angled 1-celled 1-seeded nut, forming, with the imbricated persistent bracts, a cone-like spike.

1. BETULA, Tourn. Birch.

Sterile aments drooping. Bracts 3-flowered, 2-bracteolate, peltate. Calyx scale-like. Stamens short: anthers 1-celled. Fertile aments oblong or cylindrical. Bracts 3-flowered. Calyx none. Stigmas filiform. Nut broadly winged. Cotyledons oblong. — Trees or shrubs, with the outer bark often separable into thin papery sheets. Leaves petioled, serrate. Fruiting bracts membranaceous.

1. **B. nigra,** L. (Black Birch.) Leaves rhombic-ovate, acute, doubly serrate, smooth above, hoary-tomentose beneath, like the short petioles and branchlets, becoming rusty or smoothish; sterile aments long and drooping; the fertile ones oblong, short-peduncled, with the woolly bracts cleft into three linear-oblong nearly equal lobes. (B. rubra, *Michx.*) — Banks of rivers, Florida, and northward. March. — A middle-sized tree, with reddish-brown bark, and long spreading branches.

2. **B. excelsa,** Ait. (Yellow Birch.) Leaves ovate or oblong-ovate, acuminate, unequally and doubly serrate, pubescent, like the branchlets, when young, at length smooth on both sides, on short pubescent petioles; fruiting aments oval-oblong; lobes of the bracts nearly equal, slightly spreading and hairy, acute. (B. lutea, *Michx.*) — Mountains of North Carolina, and northward. March and April. — A tree 40° – 60° high, with yellowish bark. Leaves 2′ – 3′ long.

3. **B. lenta,** L. (Cherry Birch.) Branchlets smooth; leaves ovate or oblong-ovate, acute, cordate, finely and doubly serrate, silky when young, at

length only on the petioles and veins beneath; fruiting aments oblong; lobes of the bracts widely spreading, acute, smooth. — Cool shady banks in the upper parts of Georgia, and northward. March. — A middle-sized tree, with dark brown rugged bark, and close and fine-grained wood. Young twigs spicy and aromatic.

2. ALNUS, Tourn. ALDER.

Sterile aments elongated, drooping. Bracts peltate, 5-bracteolate, 1 – 3-flowered. Calyx 4-parted or (in No. 2) scale-like. Stamens 4: anthers 2-celled. Fertile aments short, erect. Bracts fleshy, 2-flowered. Calyx of four minute scales, adherent to the bracts. Bracts of the fruiting ament woody, persistent. Nut angled or winged. — Shrubs or small trees. Leaves petioled, serrate, the stalked buds covered with a single scale. Fertile aments racemed.

1. **A. serrulata,** Ait. Leaves obovate, obtuse or abruptly pointed, serrulate, commonly pubescent beneath, acute at the base, short-petioled; stipules oval, obtuse; fruiting aments ovoid, short-peduncled; fruit ovate, wingless. — Banks of streams, Florida, and northward. Jan. – March. — Shrub 3° – 12° high. Leaves 2′ – 4′ long, thickish, and partly persistent at its southern limits. Calyx of the sterile flowers 4-parted.

2. **A. viridis,** DC. Leaves oval, rounded at both ends, slightly oblique at the base, finely and sharply serrate, softly pubescent on the lower surface, or only on the veins and petiole, stipules ovate; calyx of the sterile flowers scale-like; fruiting aments ovoid, long-peduncled; fruit winged. High mountains of North Carolina, and northward. April. — A low much branched shrub. Leaves 1′ – 2′ long.

ORDER 131. SALICACEÆ. (WILLOW FAMILY.)

Trees or shrubs, with soft wood, alternate simple stipulate leaves, and dicœcious amentaceous flowers, destitute of calyx and corolla, each solitary in the axil of a simple bract. Stamens 2 – many. Ovary 1-celled or imperfectly 2-celled, with numerous erect anatropous ovules in each cell. Styles 2, very short, more or less united: stigmas 2-lobed. Fruit a 2-valved many-seeded capsule. Seeds minute, clothed with long silky hairs. Albumen none. Cotyledons elliptical, flattened. Radicle pointing downward.

1. SALIX, Tourn. WILLOW.

Bracts of the aments entire. Flowers each with 1 – 2 small glands. Stamens 2 - 6, free, or their filaments cohering at the base. Stigmas short, 2-lobed. — Leaves commonly narrow, short-petioled. Stipules scale-like and deciduous, or leafy and persistent. Buds covered with a single scale. Aments mostly erect, appearing with or before the leaves.

** Aments small, sessile: ovary silky: stamens 2. — Low canescent shrubs, with small leaves. Aments developed before the leaves.*

1. **S. tristis,** Ait. Leaves very numerous, lanceolate, obtuse or acute, entire or wavy, at least on the margins, tapering at the base, nearly sessile, covered with a grayish down, at length smoothish above; stipules minute, caducous; flowering aments small, globular; the oval bracts hairy on the margins; style short; ovary slender, long-beaked. — Dry barren soil, in the upper districts of Georgia, and northward. March and April. — Shrub 1°–2° high. Leaves 1′–2′ long.

2. **S. humilis,** Marshall. Leaves lanceolate, obtuse or abruptly pointed, narrowed into a petiole, smoothish above, grayish-pubescent beneath, often slightly serrate near the summit; stipules small, semi-cordate or lunate, entire or toothed; flowering aments ovoid or oblong, often drooping, with the lanceolate bracts villous; style conspicuous; ovary slender. (S. conifera, *Muhl.* S. Muhlenbergiana, *Willd.*) — Barren soil in the upper districts, and northward. March. — Shrub 2°–4° high, often bearing cone-like excrescences.

3. **S. rosmarinifolia,** L. Leaves linear-lanceolate, nearly entire, flat, pubescent above, silky beneath; ovary lanceolate, villous; styles elongated. — Swamps and low ground, Florida? and northward. — Shrub 2°–4° high. Branches silky. Leaves 1′–2′ long. Stipules subulate. Bracts oblong, obtuse, hairy on the margins.

*** Aments large, cylindrical, sessile, silky-villous, developed before the leaves: ovaries woolly.— Large shrubs.*

4. **S. discolor,** Muhl. Branchlets pubescent; leaves oblong, petioled, acute at each end, serrate in the middle, smooth and shining above, glaucous beneath; stipules semi-lunar, toothed; aments woolly, with glossy hairs; stamens 2; ovary white-silky, sessile. — Low ground, Carolina, *Pursh*, and northward. April. — Shrub 8°–10° high. Leaves 2′–4′ long. Aments 1′–1½′ long.

**** Aments large, cylindrical, on leafy peduncles or branchlets, appearing with the leaves: ovaries smooth, stalked.*

5. **S. Floridana,** n. sp. Leaves ovate-lanceolate, acute, smooth above, glaucous beneath, finely serrate, rounded at the base, the petioles pubescent; stipules small, caducous; fruiting ament oblong, dense; capsule ovate-lanceolate, smooth. — Rocky banks, West Florida, fruiting in April. — Shrub 8°–12° high. Leaves thin, 2′–3′ long. Fruiting aments 2′–3′ long, 1′ in diameter, enveloped in the copious wool of the seeds. Flowers not seen.

6. **S. nigra,** Marshall. Leaves lanceolate, acute at each end, serrate, petioled, pubescent when young, becoming smoothish and green on both surfaces; stipules small and caducous, or sometimes lunate, toothed, and persistent; aments elongated, the fertile ones slender, loose-flowered; bracts deciduous; stamens 3–6, hairy below; capsule ovate, acuminate, pointed by the conspicuous style. (S. Houstoniana, *Pursh.*) — Swamps and muddy banks of rivers, Florida, and northward. A shrub or small tree, with brittle branches. Leaves 2′–3′

long, sometimes pubescent at maturity, like the branchlets. Fertile aments 3′ – 4′ long.

The WEEPING-WILLOW (S. Babylonica, *Tourn.*), and the YELLOW WILLOW or GOLDEN OSIER (S. vitellina, *Smith*), are introduced species.

2. POPULUS, Tourn. COTTON-WOOD. POPLAR. ASPEN.

Bracts of the aments toothed or lobed. Flowers from an oblique cup-shaped disk. Stamens few or numerous, with the filaments free. Stigmas elongated, 2-parted. — Trees. Leaves ovate or roundish, on long and often laterally compressed petioles. Buds covered with imbricated, often resinous-coated scales. Aments slender, drooping, appearing before the leaves.

1. **P. angulata,** Ait. Branches thick, smooth, and sharply angled; leaves large, smooth, deltoid-ovate, acute or slightly acuminate, truncate at the base, obtusely serrate with incurved teeth; the conspicuous veins and compressed petiole yellowish. — Banks of rivers, Florida, and northward. March and April. — A large tree. Leaves 6′ – 8′ long, longer than the petiole.

2. **P. grandidentata,** Michx. Branches terete; leaves round-ovate, acute, sinuate-toothed, hoary-tomentose when young, like the branchlets, at length smooth, scarcely longer than the slender compressed petiole; fruiting aments elongated, pubescent. — Low woods in the upper districts, and northward. March and April. — A middle-sized tree, with smooth gray bark. Leaves 3′ – 5′ long, and nearly of the same width.

3. **P. heterophylla,** L. Branches terete; leaves ovate, mostly obtuse, serrate, with obtuse, incurved teeth, rounded or with a small sinus at the base, hoary-tomentose on both sides when young, like the nearly terete petioles and branchlets, at length only on the veins beneath; fruiting aments smooth. — River-swamps in the middle and upper districts, Mississippi to North Carolina, and northward. March and April. — A large tree. Leaves 3′ – 5′ long.

The LOMBARDY POPLAR (P. dilatata, *Ait.*), and the WHITE POPLAR (P. alba, *L.*), are introduced species.

SUBCLASS II. GYMNOSPERMÆ.

Ovules naked (not enclosed in an ovary), commonly supported by an open scale or leaf, and fertilized by the direct application of the pollen. Cotyledons often more than two.

ORDER 132. CONIFERÆ. (PINE FAMILY.)

Trees or shrubs, with branching stems, composed of glandular or disk-bearing woody tissue without ducts, resinous juice, linear or needle-shaped

mostly persistent leaves, and monœcious or diœcious amentaceous flowers. Calyx and corolla none. Ovules orthotropous. Fruit a cone or drupe, Embryo in the axis of the albumen. Cotyledons 2 or more.

Synopsis.

SUBORDER I. ABIETINEÆ. Fertile flowers consisting of numerous bracted imbricated carpellary scales, bearing two collateral inverted ovules at their base, and forming a cone in fruit. Buds scaly.

1. PINUS. Leaves 2 – 5 in a cluster, mostly elongated, sheathed at the base.
2. ABIES. Leaves single, short, destitute of a sheath.

SUBORDER II. CUPRESSINEÆ. Fertile flowers consisting of few bractless mostly peltate carpellary scales, bearing one or several erect ovules at their base, becoming fleshy or indurated, and forming in fruit a drupe or cone. Buds naked.

3. JUNIPERUS. Fruit a drupe. Leaves minute, imbricated.
4. CUPRESSUS. Fruit a globular cone, with peltate scales. Leaves imbricated, persistent.
5. TAXODIUM. Fruit a globular cone, with peltate scales. Leaves spreading, on slender deciduous branchlets.
6. THUJA. Fruit an oblong cone, with imbricated oblong scales. Leaves minute, imbricated on the flattened branches, persistent.

SUBORDER III. TAXINEÆ. Fertile flower solitary, without a carpellary scale. Fruit a drupe. Buds scaly.

7. TAXUS. Drupe surrounded by a fleshy cup. Albumen homogeneous.
8. TORREYA. Drupe naked. Albumen ruminated.

1. PINUS, Tourn. PINE.

Flowers monœcious. Sterile aments spiked or clustered. Stamens numerous on the axis, with very short filaments: anthers with a scale-like connective, 2-celled, opening lengthwise. Fertile aments terminal, single or clustered. Carpellary scales in the axils of deciduous bracts, each bearing two collateral inverted ovules at the base, indurated in fruit, and forming a cone; the apex commonly thickened, angular, and spiny. Seeds nut-like, lodged in an excavation at the base of the scale, and furnished with a thin deciduous wing. Embryo in the axis of oily albumen. Cotyledons 3 – 12, linear. — Trees. Leaves evergreen, needle-shaped, 2 – 5 in a cluster, their bases enclosed in a thin scarious sheath.

* *Leaves two in each sheath.*

1. **P. pungens,** Michx. (TABLE-MOUNTAIN PINE.) Leaves from a short sheath, crowded, short and rigid; cones large, commonly 3 – 4 in a whorl, ovate, sessile, the thick scales pointed at the apex, and armed with a very stout spine, which on the upper scales is incurved, on the lower ones recurved. — Mountains, rarely west of the Blue Ridge, Georgia to North Carolina, and northward. — A

tree 40° – 50° high, with rigid and irregular branches. Leaves about 2′ long. Cones 3′ long, yellowish-brown. Buds resinous.

2. **P. inops,** Ait. (JERSEY or SCRUB PINE.) Branchlets smooth and glaucous; leaves from short sheaths, scattered, short and rigid, flat on the inner face; cones solitary, conical-oblong, mostly reflexed, short-peduncled; scales armed with a straight subulate rigid spine. — Dry sandy or gravelly ridges in the middle districts, South Carolina, and northward. — A tree 15° – 30° high, with rough blackish bark, and spreading or recurved flexible branches. Leaves 1′ – 2′ long, dark green. Cones light brown, about 2′ long, opening at maturity.

3. **P. glabra,** Walt. Branches and branchlets smooth, whitish; leaves slender, scattered; cones generally solitary, somewhat cylindrical; spines nearly obsolete. — In close rich soil, near Black Oak, South Carolina, *Ravenel.* — A tree 40° – 60° high, with smoothish bark and soft white wood, branching from near the ground. Leaves 3′ – 4′ long. Cones about 2′ long. "Wings of the seed lighter colored, more tapering, longer and less gibbous than those of P. mitis." This species of Walter, long overlooked, but lately revived by Mr. Ravenel, is, if I mistake not, not uncommon in the low hummocks of this State, and is distinguished here, as in South Carolina, as the SPRUCE-PINE.

4. **P. mitis,** Michx. (SHORT-LEAVED PINE.) Leaves from a long sheath, crowded, very slender, concave on the inner face, dark green; cones small, mostly solitary, oval or conical-oblong; the thin scales flattened at the apex, and armed with a weak incurved spine. (P. variabilis, *Pursh.*) — Light clayey soil, Florida, and northward. — A large tree, with rough bark, and fine-grained valuable wood. Leaves 3′ – 5′ long, sometimes three in a sheath. Cones light brown, about 1½′ long, opening at maturity. Wings of the seed reddish.

* * *Leaves three in each sheath.*

5. **P. rigida,** Miller. (PITCH-PINE.) Leaves crowded, from a very short sheath, rigid, flattened on the inner face; cones single or clustered, sessile, ovate, the scales armed with a short and rigid recurved spine. — Sandy barren soil in the upper districts, and northward. — A small or middle-sized tree, with thick blackish rugged bark, and hard resinous wood. Branches numerous, rigid, rough with the persistent bases of the leaf-bracts. Leaves 3′ – 5′ long. Cones 2′ – 3′ long, light-brown.

6. **P. serotina,** Michx. (POND-PINE.) Leaves somewhat crowded, from a short sheath, elongated; cones mostly opposite, round-ovate, sessile; the scales rounded at the apex, and armed with a very small and weak spine. — Borders of ponds and swamps in the lower districts, Florida to North Carolina. — A small tree, with rough bark and sappy valueless wood. Leaves 5′ – 8′ long. Cones 2′ – 3′ long.

7. **P. Tæda,** L. (LOBLOLLY or OLD-FIELD PINE.) Branches scaly; leaves from a long sheath, slender, elongated; cones large, solitary, oblong-conical, with the scales armed with a short and rigid straight spine. — Light

and mostly damp soil, Florida to North Carolina. — Commonly a lofty tree, with very thick and furrowed bark, and valuable, but sparingly resinous wood; but in old fields low, with spreading branches. Leaves 6′ – 10′ long, rarely 2 or 4 in a sheath, dark green. Cones 3′ – 5′ long.

8. **P. australis,** Michx. (LONG-LEAVED or YELLOW PINE.) Leaves very long, from long sheaths, crowded at the summit of the thick and very scaly branches; cones large, cylindrical or conical-oblong, the thick scales armed with a short recurved spine. (P. palustris, *L.*, the prior but inappropriate name.) — Sandy soil, constituting almost the entire growth of the Pine Barrens. — A lofty tree, with thin-scaled bark, and very valuable resinous wood, dividing near the summit into few spreading branches. Leaves 10′ – 15′ long. Leaf-bracts scarious, fimbriate. Cones 6′ – 10′ long.

* * * *Leaves five in each sheath.*

9. **P. Strobus,** L. (WHITE PINE.) Leaves slender, from a very short and deciduous sheath; cones long, cylindrical, recurved, with the loosely imbricated scales neither thickened nor spiny at the apex. — A tree of moderate dimensions on the mountains of Georgia and North Carolina, but northward one of the loftiest of trees, and greatly valued for its soft white wood. Leaves 3′ – 4′ long. Cones 4′ – 6′ long.

2. ABIES, Tourn. SPRUCE. FIR.

Chiefly as in Pinus, but the aments mostly solitary; anthers opening lengthwise or transversely; scales of the cone not thickened at the apex, nor spiny; wings of the seed persistent. — Leaves single, short.

* *Cones lateral, erect; with the scales deciduous at maturity: anther-cells opening transversely.*

1. **A. Fraseri,** Pursh. (SILVER or BALSAM FIR.) Leaves somewhat distichous, linear, flattened, obtuse or emarginate, whitened beneath, the lower ones somewhat recurved, the uppermost erect; cone oblong-ovate; bracts long, oblong-wedge-shaped, short-pointed, reflexed at the summit. — High mountains of North Carolina, and northward. — A small tree. Leaves 6″ – 8″ long. Cones 1′ – 2′ long.

* * *Cones terminal, pendulous, with the scales persistent: anther-cells opening lengthwise.*

2. **A. Canadensis,** Michx. (HEMLOCK-SPRUCE.) Leaves distichous, flat, linear, obtuse, dark green above, whitened beneath; cones small, oval or oblong, with the few scales smooth and entire. — High mountains of North Carolina, and northward. — A large tree with the horizontal branches gradually diminishing upward, forming a pyramidal spray. Leaves ½′ long. Cones 8″ – 9″ long.

3. **A. nigra,** Poir. (BLACK SPRUCE.) Leaves scattered on all sides of the branches, needle-shaped, 4-sided, erect, dark green; cone ovate or ovate-

oblong; the scales with a thin wavy or denticulate margin. — High mountains of North Carolina, and northward. — A tall but slender tree. Leaves $\frac{1}{2}'$ long, rigid. Cones $1'-1\frac{1}{2}'$ long.

4. **A. alba,** Michx. (WHITE SPRUCE.) Leaves inserted on all sides of the branches, needle-shaped, 4-sided, incurved, light green; cones oblong-cylindrical, with the scales entire. — High mountains of North Carolina, and northward. — A small tree, with more slender and less crowded leaves than those of the preceding. Cones $1'-2'$ long.

3. JUNIPERUS, L. JUNIPER.

Flowers mostly dicœcious. Aments lateral and terminal, small, few-flowered. Stamens several: anther-cells 3 – 6, inserted beneath the peltate scale, opening lengthwise. Carpellary scales 3 – 6, 1 – 3-ovuled, partly united, fleshy, and forming in fruit a berry-like drupe containing 1 – 3 erect bony seeds. Cotyledons 2, oblong. — Trees, with subulate or scale-like persistent leaves.

1. **I. Virginiana,** L. (RED CEDAR.) Branches terete; leaves opposite or by threes, minute, rhombic-ovate, closely imbricated, depressed on the back; those on young shoots subulate and spreading; drupes small, blue, 1 – 2-seeded. — Dry, rocky, or even wet soil, Florida, and northward. March. — A small tree, with reddish, fine-grained, durable, and odorous wood, and spreading branches. Leaves dark green.

4. CUPRESSUS, Tourn. CYPRESS.

Flowers monœcious. Aments terminal, few-flowered. Anther-cells 2 – 4, inserted under the lower edge of the peltate scale, opening lengthwise. Carpellary scales peltate, bearing several erect ovules on their stalks, becoming woody in fruit, and forming a globular dehiscent cone. Seeds winged at each end. Cotyledons 2 – 3, obtuse. — Trees, with minute imbricated leaves.

1. **C. thyoides,** L. (WHITE CEDAR.) Branchlets compressed, crowded, distichous; leaves ovate, imbricated in 4 rows, with a roundish gland on the back; anther-cells two under each scale; cones small. — Swamps, Florida, and northward. April. — A middle-sized tree, with fibrous bark, and light durable wood. Branches spreading. Cones $3''-4''$ in diameter, borne on short scaly stalks.

5. TAXODIUM, Richard. CYPRESS. BALD-CYPRESS.

Flowers monœcious. Sterile aments small, in a long drooping spiked panicle. Scales peltate. Anther-cells 2 – 5, opening lengthwise. Fertile aments single or by pairs, with the peltate scales 2-ovuled. Cone globular. Scales very thick, angular, slender-stalked, separating at maturity. Seeds 3-angled, wingless. Cotyledons 6 – 9, linear. — Trees, with distichous deciduous leaves.

1. **T. distichum,** Rich. Leaves alternate, opposite, or whorled, on very numerous short and slender deciduous branchlets, linear, acute, 2-ranked or im-

bricated. (Cupressus disticha, *L.*) — Ponds and deep swamps. Florida, and northward. Feb. and March. — A very large tree, with pale smoothish bark, light durable wood, and few fastigiate branches at the summit. Leaves 4″ – 6″ long. Cones ¾′ – 1′ in diameter. Attached to the roots are hollow conical knobs called Cypress-Knees.

6. THUJA, Tourn. Arbor-Vitæ.

Flowers monœcious. Aments small, terminal. Anther-cells 4, with a scale-like connective. Carpellary scales imbricated in four rows, with two erect ovules at the base. Cone oblong, the few scales imbricated, expanding at maturity, persistent. Seed winged. Cotyledons 2, oblong. — Trees or shrubs, with scale-like imbricated persistent leaves.

1. **T. occidentalis,** L. (Arbor-Vitæ.) Branches flat, distichous; leaves ovate, obtuse, with a gland on the back, imbricated in four rows; cones oblong, nodding, with the outer scales oblong, obtuse; seeds broadly winged, emarginate at each end. — Rocky banks on the mountains of Carolina, and northward. — A small or middle-sized tree. Cones ½′ long.

7. TAXUS, Tourn. Yew.

Flowers dicœcious, axillary; the sterile ones in globular few-flowered aments. Anther-cells 3 – 8, inserted under the peltate scale. Fertile flowers solitary, scaly-bracted, consisting of a single ovule on a cup-shaped disk, which becomes large and berry-like in fruit, and surrounds the nut-like seed. Embryo in the axis of mealy albumen. — Trees or shrubs, with scattered branches, linear rigid distichous leaves, and scaly buds.

1. **T. Floridana,** Nutt. Leaves narrowly linear, mucronate, conspicuously petioled (about 9″ long), the outer margin revolute; fruit abundant; the fleshy disk of the seed bright red. — Banks of the Apalachicola River, Middle Florida. — A small tree, 10° – 20° high.

8. TORREYA, Arnott.

Flowers dicœcious, axillary; the sterile ones in globose or oblong aments. Anther-cells 4, inserted under the peltate scale. Fertile flowers solitary, consisting of a solitary ovule surrounded with imbricated persistent scales. Disk none. Seed large, ovoid, naked. Embryo at the apex of hard ruminated albumen. Cotyledons 2, linear. — Trees, with whorled branches. Leaves distichous, rigid, persistent. Buds scaly.

1. **T. taxifolia,** Arn. Branchlets opposite, 2-ranked; leaves linear, spiny-pointed, nearly sessile, light green; sterile aments yellow, crowded; seed ovoid, drupe-like. — Rich soil, along the east bank of the Apalachicola River, Middle Florida. March. — A middle sized tree, with durable strong-scented wood, and horizontal branches. Leaves very rigid, and pungent, 1′ long. Seed smooth and glaucous, similar in shape and size to a nutmeg.

ORDER 133. CYCADACEÆ. (CYCAS FAMILY.)

Trees or shrubs, with simple trunks, increasing by a terminal bud, like the Palms, and composed of a large pith, mixed with woody bundles or plates, enclosed in a cylinder of woody fibre and spiral vessels. Leaves pinnate, coiled in the bud, like Ferns. Flowers diœcious, destitute of calyx and corolla. Sterile flowers consisting of 1-celled anthers inserted under the peltate scales of a cone-like ament. Fertile flowers consisting of naked ovules inserted under the scales like the sterile flowers, or on the margins of contracted leaves. Seed nut-like. Embryo in the axis of the albumen. Radicle ending in a long spiral cord. Cotyledons 2.

1. ZAMIA, L.

Flowers in cone-like aments, with the peltate scales inserted on all sides of the common rachis. Anthers numerous. Ovules by pairs, pendulous. Seed roundish, drupe-like. — Leaflets thickened at the base and articulated with the petioles, with numerous simple veins.

1. **Z. integrifolia,** Willd. (COONTIE.) Stem short, globular or oblong; leaves petioled, spreading, with the numerous lanceolate or linear-lanceolate leaflets entire, or serrate near the apex; aments oblong, obtuse, short-peduncled. — Low grounds, South Florida. — The stem abounds in starch, from which the Florida Arrowroot is obtained.

CLASS II. MONOCOTYLEDONOUS OR ENDOGENOUS PLANTS.

Stems composed of cellular tissue and scattered bundles of woody fibre and vessels, destitute of proper pith, bark, or concentric layers, and increasing in diameter by the deposition of new fibrous bundles. Leaves mostly alternate, entire, and parallel-veined, commonly sheathing at the base, seldom falling off by an articulation. Floral envelopes usually by threes. Cotyledons single.

ORDER 134. PALMÆ. (PALMS.)

Chiefly trees, with a thick woody stem (caudex), growing by a terminal bud, pinnate or fan-shaped leaves, which are plaited in the bud, and a spadix of small perfect or polygamous flowers. Sepals and petals 3, free or more or less united, persistent. Stamens mostly 6, hypogynous or perigynous: anthers 2-celled, introrse. Ovary 3-celled, commonly with a

single erect orthotropous or anatropous ovule in each cell. Styles 3, mostly united: stigmas entire. Fruit a drupe or berry. Embryo cylindrical, placed in a cavity of the hard albumen, near the circumference of the seed. — Stems erect or creeping. Leaves long-petioled. Spadix axillary.

1. SABAL, Adans. PALMETTO.

Flowers perfect, sessile, bracted. Calyx cup-shaped, 3-cleft. Corolla 3-petalled. Stamens 6, hypogynous; the filaments subulate, distinct. Anthers cordate-ovate, horizontal. Ovary 3-celled. Styles united, 3-angled: stigma capitate or obtuse. Fruit a 1-seeded drupe. Embryo dorsal. Albumen homogeneous, horny. — Stems simple or branched, erect or creeping. Leaves fan-shaped, long-petioled, with the divisions 2-cleft at the apex and often with long thread-like filaments interposed. Spadix long, branching, with sheathing spathes at the joints. Flowers small, whitish, rigid. Drupe oblong or globose. Sheaths of the leaves commonly composed of dry interlaced fibres.

1. **S. Palmetto,** R. & S. (CABBAGE-PALMETTO.) Stem erect, tall, simple, leafy at the summit; leaves large, cordate in outline, pinnatifid-fan-shaped, recurved at the summit, mostly shorter than the smooth concave petiole; the very numerous divisions deeply cleft, and with thread-like filaments at the sinuses; spadix smooth and spreading, commonly shorter than the leaves; petals slightly united at the base; style thick; drupe globose. (Chamærops Palmetto, *Michx.*) — Sandy soil along the coast, Florida to North Carolina. June. — Stem 20° – 40° high. Leaves 5° – 8° long, their bases long-persistent. Drupe black, 4″ – 5″ in diameter.

2. **S. serrulata,** R. & S. (SAW-PALMETTO.) Stem creeping, branching; leaves circular in outline, fan-shaped, bright-green, shorter than the slender plano-convex more or less spiny-edged petiole; the numerous (15 – 30) erect divisions slightly cleft at the apex, and without thread-like filaments in the sinuses; spadix densely tomentose, much shorter than the leaves; petals scarcely united; style slender; drupe ovoid-oblong. (S. minima, *Nutt.?* Chamærops, *Pursh.*) — Sandy soil in the lower districts, Florida to South Carolina. June. — Stem 4° – 8° long. Leaves 2° – 4° high. Drupe black, 8″ – 9″ long.

3. **S. Adansonii,** Guerns. (DWARF PALMETTO.) Stem short, buried in the earth; leaves circular in outline, glaucous, fan-shaped, slightly pinnatifid, longer than the stout concave smooth-edged petiole; the numerous (20 – 30) divisions slightly cleft at the apex, sparingly filamentose at the sinuses; spadix erect, smooth, slender, much longer than the leaves; petals united at the base; style thick; drupe globose. (S. pumila, *Ell.*) — Low grounds in the lower districts, Florida to North Carolina. June and July. — Leaves 2° – 3° high. Spadix 3° – 6° high. Drupe 4″ in diameter, black. Nut hemispherical.

2. CHAMÆROPS, L.

Flowers polygamous, bracted. Calyx 3-cleft. Corolla 3-petalled. Stamens 6 – 9, with the filaments connate at the base: anthers oblong. Ovaries 3, more

or less united. Stigmas acute, stigmatic on the inner face. Drupes 1 – 3, one-seeded. Embryo dorsal, in horny somewhat ruminated albumen. — Low palms, with fan-like long-petioled leaves, destitute of thread-like filaments. Sheaths soon dry and net-like. Spadix dense-flowered, branching. Spathe 2 – 4-leaved. Flowers yellowish. Drupe globose or ovoid.

1. **C. Hystrix,** Fraser. (BLUE PALMETTO.) Stem short, proliferous; leaves circular in outline, with numerous 2 – 4-toothed divisions, on triangular rough-edged petioles; sheaths persistent, composed of oblique fibres interwoven with numerous erect strong spines; spadix small, short-peduncled; spathes about 4, oblong, woolly, acutely 2-lipped; petals ovoid; drupe ovoid. — Low shady woods in the lower districts, Florida to South Carolina. June and July. — Stem 2° – 3° long, erect or creeping. Leaves somewhat glaucous, 3° – 4° high. Spadix 6′ – 12′ long. Partial spathes none. Drupe 6″ – 9″ long.

ORDER 135. ARACEÆ. (ARUM FAMILY.)

Acrid chiefly stemless herbs, from tuberous or creeping rootstocks, with entire or divided often veiny leaves, and perfect or monœcious flowers borne on a spadix, and commonly enclosed in a spathe. — Calyx and corolla wanting, or the former with scale-like sepals. Stamens short, hypogynous: anthers extrorse, commonly sunk in the thick connective. Ovary 1 – several-celled, with 1 – several ovules in each cell. Stigma sessile. Fruit fleshy, indehiscent. Embryo straight. Albumen mealy or fleshy, sometimes wanting.

Synopsis.

* Calyx and corolla none. Spadix enclosed in a spathe. Flowers monœcious.

+ Fertile flowers numerous. Spadix free.

1. ARISÆMA. Spathe thin, convolute at the base, arching above. Spadix barren above. Leaves 3 – several-lobed.
2. PELTANDRA. Spathe (green) thick, convolute throughout, wavy on the margins. Spadix flowering throughout. Leaves sagittate.
3. XANTHOSOMA. Spathe convolute at the base, open and white above. Spadix flowering throughout. Leaves sagittate.

+ + Fertile flower solitary. Spadix adnate to the spathe.

4. PISTIA. Free-floating aquatics. Fertile flowers solitary.

* * Calyx manifest. Flowers perfect.

+ Spadix enclosed in a spathe.

5. SYMPLOCARPUS. Spathe thick and fleshy, convolute, pointed. Spadix globular. Sepals and stamens 4.

+ + Spadix naked.

6. ORONTIUM. Spadix terminating the club-shaped white-topped scape.
7. ACORUS. Spadix attached to the side of the flattened leaf-like scape.

1. ARISÆMA, Mart. INDIAN TURNIP.

Spathe convolute below, dilated and commonly arched above, withering. Spadix covered below with monœcious flowers (the lower ones fertile), clon-

gated and naked above. Calyx and corolla none. Stamens 4 in a whorl, very short: anther-cells 2 – 4, distinct, opening at the top. Ovary 1-celled, with 5 – 6 erect orthotropous ovules. Stigma sessile. Fruit a 1 – few-seeded scarlet berry. Embryo in the axis of mealy albumen. — Root tuberous. Petioles of the commonly divided and veiny leaves elongated and sheathing the scape. Fruit-clusters naked.

1. **A. triphyllum,** Torr. (WAKE-ROBIN.) Leaves two, trifoliate; leaflets sessile, oblong-ovate, acuminate; spathe tubular, dilated, flattened and incurved above, acuminate, green, or variegated with white and purple, longer than the club-shaped obtuse often dicœcious spadix. (Arum triphyllum, *L.*) — Low rich woods, Florida, and northward. March. — Plant 1° – 1½° high. Leaflets 3′ – 6′ long. Root depressed, rugose, intensely acrid.

2. **A. polymorphum.** Leaf solitary, 3 – 5-foliolate; leaflets varying from oblong to obovate, acute or slightly acuminate, nearly sessile, the lateral ones entire, 2-lobed or 2-parted to the base; spathe, &c. as in the preceding. (Arum polymorphum, *Buckley.* A. quinatum, *Nutt.* ?) — Mountains of North Carolina. — Plant 1° – 1½° high.

3. **A. Dracontium,** Schott. (DRAGON-ROOT.) Leaf solitary, pedately 9 – 13-foliolate; leaflets petioled, entire, lanceolate or oblong, acuminate; spathe tubular (green), concave and erect above, much shorter than the very slender spadix. (Arum Dracontium, *L.*) — Rich woods, Florida, and northward. March and April. — Plant 1° – 1½° high. Berries numerous on the flat rhachis, 1 – 3-seeded.

2. PELTANDRA, Raf. ARROW-ARUM.

Spathe elongated, fleshy, convolute throughout, wavy on the margins, curved at the apex, persistent at the base. Spadix long, wholly covered by the monœcious flowers. Calyx and corolla none. Anther-cells 5 – 6, imbedded in the thick peltate connective, opening by a terminal pore. Ovary 1-celled, with several orthotropous ovules. Berry 1 – 3-seeded. Seed gelatinous, without albumen. Embryo large. Plumule conspicuous, curved. — A fleshy stemless marsh herb, from a creeping rhizoma. Leaves sagittate, with the petiole sheathing the base of the thick scape. Fruit-clusters enclosed in the fleshy persistent base of the spathe.

1. **P. Virginica,** Raf. Leaves several, oblong, acute, finely veined, and with 2 – 3 intramarginal nerves, the lobes obtuse; scapes shorter than the leaves recurved in fruit; spathe lanceolate, acute, longer than the cylindrical spadix, both early decaying above the fertile flowers; berries green, in a globose cluster, 1-seeded. (Arum Virginicum, *L.*) — Marshes and wet places, Florida, and northward. April and May. — Plant 1° high. Spathes 2′ – 4′ long.

3. XANTHOSOMA, Schott.

Spathe convolute at the base, straight. Spadix sterile in the middle. Calyx and corolla none. Anther-cells numerous, adnate to the conical truncate

connective, opening at the apex. Ovaries numerous, crowded, somewhat 4-celled, with numerous horizontal ovules in each cell. Style short and thick: stigma broad, depressed, lobed. Berry red, many-seeded. — Herbs. Petioles of the sagittate leaves sheathing the base of the scape.

1. **X. sagittifolium,** Schott. Stemless; leaves glaucous, hastate-cordate, acuminate, the lobes oblong, obtuse; spathe hooded at the summit, oval-lanceolate, white, longer than the spadix. — Marshes and springy places, near Savannah, *Elliott,* and Wilmington, *Curtis.* May and June. ♃ — Root tuberous. Petioles 12′ – 15′ long. Leaves 5′ – 7′ long, the lobes somewhat spreading and generally obtuse. Scape as long as the petioles.

4. PISTIA, L.

Spathe tubular at the base, spreading above, united with the spadix. Flowers few, monœcious, the upper ones staminate and supported by a cup-shaped involucre; the fertile solitary. Calyx and corolla none. Anther-cells 3 – 8, opening transversely. Ovary 1-celled, with several erect orthotropous ovules. Style thick: stigma disk-like. Berry few – many-seeded. Embryo at the apex of the albumen. — Small free-floating aquatic herbs, with fibrous roots, and entire clustered spreading leaves, with the flowers in their axils.

1. **P. spathulata,** Michx. Leaves arranged in a circle, round-obovate, abruptly contracted into a short petiole, with the nerves projecting beneath (lamelliform); roots numerous, elongated; spathe short-peduncled, white. — In still water, East Florida, and westward. — Leaves 1′ – 2′ long.

5. SYMPLOCARPUS, Salisb. Skunk-Cabbage.

Spathe hooded-shell-form, acuminate, fleshy, early decaying. Spadix peduncled, globose, covered with the perfect flowers. Sepals 4, hooded, berry-like in fruit. Corolla none. Stamens 4: anthers 2-celled, opening lengthwise. Ovary 1-celled, 1-ovuled. Style pyramidal, 4-angled; stigma minute. Berries with the sepals united in a mass. Seeds globose, without albumen. Embryo thick and fleshy. — Perennial garlic-scented herbs, from a deep and thick rhizoma, with large stout-petioled veiny leaves, and nearly sessile spathes, appearing before the leaves.

1. **S. fœtidus,** Salisb. Leaves thin, oval, cordate, short-petioled; spathe ovate, incurved, spotted with purple and yellow; spadix dull-purple, much shorter than the spathe, enlarged in fruit. (Pothos fœtidus, *Michx.*) — Bogs and swamps, North Carolina, and northward. Feb. and March. — Leaves 1° – 2° long. Spathe 2′ – 4′ long. Spadix in fruit 2′ – 3′ in diameter. Seeds about the size of a pea.

6. ORONTIUM, L. Golden-Club.

Spathe none. Spadix cylindrical, covered with the yellow perfect flowers. Sepals and stamens 4 – 6. Anthers 2-celled, opening lengthwise. Ovary 1-celled,

with a single amphitropous ovule. Stigma minute, sessile. Fruit green. Seed without albumen. Embryo thick and fleshy. — A perennial aquatic herb, with oblong long-petioled leaves, and a yellow erect spadix terminating the club-shaped scape.

1. **O. aquaticum,** L. Rhizoma deep, fleshy; leaves acute, nerved, on stout terete petioles; scape terete, thickened upward, white beneath the spadix, sheathed below, commonly curved. — Ponds and slow-flowing streams, Florida, and northward. March and April. — Leaves about 1° long. Scape 1° – 2° long. Spadix 1′ – 2′ long; the upper flowers mostly tetrandrous.

7. ACORUS, L. Calamus. Sweet Flag.

Scape flattened, leaf-like, with the lateral sessile spadix covered with the perfect flowers. Spathe none. Sepals and stamens 6. Corolla none. Filaments slender: anthers kidney-shaped, 1-celled, opening transversely. Ovary 2 – 3-celled, with several orthotropous suspended ovules in each cell. Stigma minute. Fruit dry, gelatinous within, 1 – few-seeded. Embryo in the axis of the albumen. — Perennial herbs, from a creeping aromatic rhizoma. Leaves erect, long, flattened, 2-edged. Scape leaf-like, elongated above the spadix.

1. **A. Calamus,** L. — Wet places, Florida, and northward, apparently introduced. April. — Rhizoma rather slender, pungent. Leaves 1° – 2° high, linear-lanceolate. Scape narrower than the leaves. Spadix cylindrical, yellowish, 2′ – 3′ long, spreading.

Order 136. LEMNACEÆ. (Duckweed Family.)

Minute aquatic floating plants, with lenticular proliferous stems (fronds), and usually simple roots, pendent from beneath. Flowers monœcious, mostly from a marginal cleft of the stem. Spathe membranaceous, pitcher-shaped, bursting into two unequal lobes, soon vanishing, commonly enclosing two sterile flowers, which are reduced to single slender filaments bearing a 2-celled anther, and a single sessile 1-celled ovary, which forms in fruit a 1 – 7-seeded utricle. Embryo straight, in the axis of fleshy albumen.

1. LEMNA, L. Duckweed.

Spathes marginal, 3-flowered. Anthers opening transversely. Stigma funnel-form. Ovules erect from the base of the cell, anatropous or half-anatropous. — Stems increasing by lateral buds. Roots terminating in a calyptre-like appendage. — The flowers of these plants are seldom seen.

1. **L. minor,** L. Stems pale, round-obovate, flattened, single or variously clustered; root single; ovule solitary, half-anatropous; seed horizontal. — Pools, ditches, &c., Florida, and northward; common near the coast, and probably intermixed with L. perpusilla, *Torr.* — Stems 1″ – 2″ long.

2. **L. polyrhiza,** L. Stems roundish or obovate, flat and pale above, convex and dark purple beneath, clustered; roots numerous, clustered; ovules 2. — Ponds, Florida, and northward. — Less common than the preceding. Stems 2″–4″ long.

ORDER 137. TYPHÀCEÆ. (CAT-TAIL FAMILY.)

Simple-stemmed marsh herbs, with elongated strap-shaped nerved leaves, and monœcious flowers, on a globular or cylindrical spadix, destitute of floral envelopes, but enveloped in copious pappus-like hairs or scales. Spathe bract-like or none. Anthers single or 2–4 together, on long and slender filaments. Ovary 1-celled, with a single suspended anatropous ovule. Style slender. Fruit nut-like. Embryo straight in copious albumen. — Sterile spadix placed above the fertile, continuous or distant.

1. TYPHA, Tourn. CAT-TAIL.

Flowers densely crowded on a long cylindrical terminal spadix, enveloped in copious pappus-like hairs; the sterile ones sessile on the upper part of the spadix, the fertile on slender stalks. Style filiform: stigma lateral. Embryo cylindrical, in the axis of fleshy albumen. — Stems straight, from a thick rhizoma, clothed below with the sheathing bases of the elongated linear leaves. Spathes bract-like and deciduous, or none.

1. **T. latifolia,** L. Stem terete, jointed below; leaves nearly as long as the stem, erect, flat, reticulated and somewhat glaucous; sterile and fertile portions of the spadix contiguous, cylindrical. — Margins of ponds and rivers, Florida, and northward. July and Aug. — Stem 4°–6° high, scape-like above. Leaves about 1′ wide. Spadix about 1° long. — T. angustifolia, *L.*, if found within our limits, may be known by narrower leaves which are channelled near the base, and by the interval which separates the sterile and fertile portions of the spadix.

2. SPARGANIUM, L. BUR-REED.

Flowers densely crowded in globular heads, surrounded by several scales like a calyx; the upper heads sterile, naked, the lower fertile and commonly bracted. Ovary sessile, pointed by the short persistent style. Stigma lateral. Fruit nut-like. Embryo cylindrical, in the axis of fleshy albumen. — Marsh or aquatic plants, with erect stems, and long strap-shaped sessile leaves, the lowest ones sheathing. Heads of flowers scattered.

1. **S. ramosum,** Huds.? Leaves flat, obtuse, the upper ones gradually shorter, concave and clasping at the base, the lower sheathing and elongated; heads 5–9, disposed in axillary and terminal interrupted spikes; the lowest one larger and pistillate, the others wholly staminate; scales wedge-shaped; stigma subulate, simple. (S. Americanum, *Ell.*) — Lagoons and ditches, Florida, and northward. July. — Stem 2°–3° high. Leaves as long as the stem, 8″–12″ wide. Heads of fertile flowers 8″–10″ in diameter.

Order 138. NAIADACEÆ. (Pondweed Family.)

Aquatic herbs, with slender jointed leafy immersed stems, and perfect monœcious or dicœcious flowers, destitute of floral envelopes, or with a scale-like calyx. Stamens 1 – 4 : anthers 1 – 4-celled. Ovary 1-celled, forming a 1-seeded achenium in fruit. Stigmas 1 – 4. Seed without albumen. Embryo straight, curved, or coiled. — Leaves sheathing, or with sheathing stipules. Flowers commonly enclosed in a spathe.

Synopsis.

* Flowers monœcious or dicœcious.

1. NAIAS. Stigmas 2 – 4. Flowers naked. Leaves opposite or whorled.
2. ZOSTERA. Stigmas 2. Flowers enclosed in a spathe. Leaves alternate.
3. ZANNICHELLIA. Stigma single, peltate. Ovaries 4, from a cup-like involucre.

* * Flowers perfect.

4. RUPPIA. Fruit long-peduncled, umbellate. Calyx and corolla none.
5. POTAMOGETON. Fruit sessile, spiked. Calyx 4-leaved.

1. NAIAS, L.

Flowers monœcious or dicœcious, axillary, sessile, destitute of calyx and corolla. Sterile flower monandrous, enclosed in a spathe. Anther 4-celled, opening at the apex, the filament lengthening. Fertile flower naked; the sessile ovary pointed with the slender style. Stigmas 2 – 4, subulate. Ovule erect. Achenium minute. Embryo straight. Radicle inferior. — Stems filiform, forking. Leaves opposite or whorled, linear, dilated into a short sheath at the base. Flowers solitary, minute.

1. **N. flexilis,** Rostk. Stem immersed (1° – 2° long); leaves 3 in a whorl, narrow-linear, membranaceous, spreading, minutely denticulate on the margins, the lower ones often remote; stigmas 3 – 4; achenium elliptical, acute, smooth, yellowish. (Caulinia flexilis, *Willd.*) — In ponds and still water, South Carolina, and northward. July and Aug. — Leaves about 1′ long.

Var. ? **fusiformis.** Stem (6′ – 12′ long) almost capillary, very leafy throughout; leaves opposite, approximate, spreading or recurved (2″ – 4″ long); achenium narrowly spindle-shaped, finely reticulated, brownish. — Brackish water along the coast. West Florida. July and Aug.

2. ZOSTERA, L. Eel-grass.

Flowers monœcious, naked; the sterile and fertile ones alternately arranged on the anterior edge of a flattened membranaceous spadix, and enclosed in the sheath-like base of the leaves. Anthers oblong, 1-celled, filled with fine filaments instead of pollen-grains. Ovary fixed near the apex, containing a single pendulous orthotropous ovule, and pointed with the subulate persistent style. Stigmas 2, capillary. Utricle bursting irregularly. Seeds striate. Cotyledons inflexed-curved, received in a longitudinal cleft of the embryo. — Marine herbs, with creeping stems, and narrowly linear obtuse and elongated sheathing leaves.

1. **Z. marina,** L. Stem slender, terete, jointed; leaves thin and tender, faintly 3 – 5-nerved; flowers in two rows on the linear spadix. — Deep salt-water coves. West Florida, and northward. Aug. and Sept.

3. ZANNICHELLIA, L.

Flowers monœcious, axillary. Sterile flower consisting of a solitary naked filament bearing a 2 – 4-celled anther. Fertile flower from the same axil, composed of 2 – 6 sessile 1-celled ovaries, surrounded by a cup-shaped involucre, and pointed with the slender style. Stigma obliquely peltate. Ovule suspended, orthotropous. Achenium oblong, stalked. Embryo slender, coiled. — Submerged aquatic plants, with filiform branching stems, and very narrow and entire alternate leaves, with sheathing stipules.

1. **Z. palustris,** L. Stems tufted, filiform, alternately branched; leaves narrowly linear, entire, acute, 1-nerved; anther 2-celled, on a long and slender filament; achenia 3 – 6 in a cluster, commonly raised on a short common peduncle, each stalked, linear-oblong, somewhat compressed and curved, smooth and wingless, about one third longer than the persistent style. — Fresh or brackish water, West Florida, and northward. May – Aug. — Stems 1° – 3° long. Leaves 1′ – 2′ long.

4. RUPPIA, L. Ditch-grass.

Flowers perfect, naked, two or more on a slender spadix, enclosed in the spathe-like sheaths of the leaves, but soon long-exserted. Stamens 2, closely sessile: anther-cells large, distinct. Ovaries 4, sessile, containing a single suspended campylotropous ovule. Stigma peltate. Achenium stalked, obliquely ovate. Embryo pointed by the short plumule. — Salt-water herbs, with filiform branching stems, and alternate linear or bristle-like sheathing leaves.

1. **R. maritima,** L. — In shallow water, along the coast, Florida, and northward. May – Aug. — Stems immersed, 1° – 3° long, mostly creeping at the base. Leaves filiform, 1′ – 3′ long, with dilated membranaceous sheaths. Fruiting peduncles 1′ – 4′ long. Achenium pointed.

5. POTAMOGETON, Tourn. Pondweed.

Flowers perfect, spiked. Sepals 4, roundish, valvate in the bud. Stamens 4, opposite the sepals: filaments short: anthers 2-celled. Ovaries 4, sessile. Ovules ascending, campylotropous. Style short or none: stigma peltate. Achenia 1 – 4, compressed. Embryo curved or coiled. — Aquatic herbs, with immersed slender and jointed stems. Leaves stipulate, alternate and opposite, either all immersed and commonly membranaceous, or the upper ones floating and more rigid. Spikes peduncled, axillary and terminal.

* *Leaves all immersed and alike.*

+ *Leaves filiform.*

1. **P. pectinatus,** L. Stem slender, flexuous; the branches diffusely forking, distichous; leaves long, thickish, slightly channelled, approximate on

the branches; stipules small, united with the long and sheathing base of the leaves; spikes slender, interrupted, on long filiform peduncles; achenium obovate, smooth, slightly compressed, keeled on the back. — Fresh or brackish water, West Florida, and northward. June – Aug. — Stems 2° – 3° long. Leaves 3′ – 4′ long. Spikes 1′ – 2′ long.

2. **P. pauciflorus,** Pursh. Stem very slender, flattened, sparingly branched; leaves scattered, thin, 3-nerved, sessile; stipules free from the leaves, connate, sheathing; spikes short-peduncled, 4 – 6-flowered, globose in fruit; achenium round-obovate, short-pointed, keeled and sinuate-toothed on the back. — Shallow ponds, Georgia, and northward. July and Aug. — Stem 1° – 2° long. Leaves 1′ – 2′ long. Peduncles ½′ – 1′ long.

+ + Leaves lanceolate or cordate: stipules free, sheathing.

3. **P. perfoliatus,** L. Stem terete, branching, very leafy; leaves ovate, cordate, clasping, obtuse, many-nerved, those at the branches and peduncles opposite; spikes lateral and terminal, oblong, densely many-flowered, on stout peduncles 2 – 3 times as long as the leaves; achenium obliquely obovate, rounded on the back, short-pointed. — Fresh or brackish water, West Florida, and northward. July – Sept. — Stems 1° – 2° long. Leaves 6″ – 8″ long.

4. **P. lucens,** L.? Stems sparingly branched; leaves lanceolate, acute, contracted and sessile at the base, pellucid, 5 – 9-nerved, wavy on the margins; stipules (white) connate, rounded on the back; spikes cylindrical, many-flowered, on stout peduncles shorter than the leaves; achenium (immature) oval, compressed, rounded on the back, short-pointed. — Fresh water, Apalachicola, Florida. Aug. — Stems 2° – 3° long. Leaves 2′ – 3′ long, equalling the spikes.

** * Leaves of two forms; the immersed ones thin and pellucid, the floating ones long-petioled and somewhat coriaceous.*

5. **P. fluitans,** Roth. Stem simple; leaves many-nerved; the floating ones varying from oblong-lanceolate to ovate, acute at each end, or obtuse or cordate at the base; the others large, oblong, gradually or abruptly short-petioled, undulate; stipules connate and keeled on the back; peduncles stout, thickened upward; spikes long, cylindrical, dense-flowered; achenium smooth, 1 – 3-keeled on the back. — Fresh-water ponds and streams, Florida, and northward. June – Aug. — Leaves 2′ – 9′ long.

P. NATANS, L. probably occurs within our limits, but I have not seen specimens. It may be known by longer-petioled (4′ – 12′) leaves, more slender peduncles, and rounded stipules and achenia.

6. **P. heterophyllus,** Schreber. Stem slender, branching; floating leaves small, thin, elliptical or oblong-linear, on filiform petioles; immersed leaves long, sessile, linear or lanceolate; stipules connate, 2-ribbed; peduncles thickened upward; spikes narrowly cylindrical; achenium smooth, slightly keeled on the back. — Shallow ponds, North Carolina, and northward. July. — Floating leaves 1′ – 2′ long. Immersed leaves 4′ – 6′ long.

7. **P. hybridus,** Michx. Small; stems very slender, branched; floating leaves lanceolate or elliptical, commonly acute at each end, shining and strongly

impressed-nerved, longer than the filiform petioles; immersed leaves filiform, scattered; spikes oval or oblong, short-peduncled; achenium nearly circular, concave on the sides, rugose or tuberculate, and 1 – 3-ridged on the back; embryo coiled. (P. setaceus, *Pursh*. P. heterophyllus, *Ell.*?) — Shallow ponds, Florida, and northward. June – Aug. — Floating leaves 6″ – 8″ long, commonly 5-nerved.

ORDER 139. ALISMACEÆ. (WATER-PLANTAIN FAMILY.)

Marsh herbs, usually with creeping runners or rootstocks, nerved and reticulated sheathing leaves, and scape-like stems, bearing the perfect or monœcious flowers in spikes or whorled racemes. — Sepals and petals 3, or the latter sometimes wanting. Stamens few or numerous: anthers 2-celled. Ovaries 3 or many, with 1 – 2 anatropous or campylotropous erect ovules. Style short or none. Achenium coriaceous, 1 – 2-seeded. Embryo straight or curved, without albumen.

Synopsis.

SUBORDER I. JUNCAGINEÆ. Sepals and petals (when present) greenish. Ovule anatropous. Embryo straight.

1. TRIGLOCHIN. Leaves rush-like. Flowers in spiked racemes.

SUBORDER II. ALISMEÆ. Petals white, deciduous. Ovule campylotropous. Embryo curved or hooked.

2. ALISMA. Flowers perfect. Achenia whorled. Racemes compound.
3. ECHINODORUS. Flowers perfect. Achenia clustered in a head.
4. SAGITTARIA. Flowers monœcious. Achenia clustered in a head.

1. TRIGLOCHIN, L.

Flowers perfect, in a spiked raceme. Sepals 3. Petals 3, and greenish, like the sepals, or none. Anthers 3 – 6, nearly sessile, oval. Ovaries 3 – 6, united around a central axis, from which they separate at maturity, 1-ovuled. Stigmas plumose. Embryo straight. — Leaves rush-like, fleshy, 2-ranked. Flowers small, bractless.

1. **T. triandrum,** Michx. Leaves erect, linear-subulate, semi-terete, dilated at the base and sheathing the base of the terete scape; flowers very numerous, on short pedicels; sepals oval, deciduous; petals none; anthers and ovaries 3; fruit globose-triangular, pointless, when dry 3-winged by the compressed 3-ribbed achenia; embryo oblong. — Salt marshes along the coast, West Florida to North Carolina. Aug. – Sept. — Scape and leaves $\frac{1}{2}$° – 1° high.

2. ALISMA, L. WATER-PLANTAIN.

Flowers perfect in a whorled panicle. Sepals 3. Petals 3, involute in the bud, deciduous. Stamens 6 – 12. Ovaries numerous in a simple whorl. Style

short. Achenium 1-seeded, 2 – 3-keeled on the back. — Roots fibrous. Leaves mostly oval or cordate, nerved, shorter than the scape. Flowers white.

1. **A. Plantago,** L. Leaves long-petioled, ovate or oblong, acute, rounded or cordate at the base, 3 – 9-nerved; panicle large, lax, the whorled branches and elongated filiform pedicels bracted at the base; achenia obtuse, 15 – 20 in a whorl. (A. trivialis, and A. parviflora, *Pursh.*) — Ditches and margins of ponds in the upper districts, Georgia, and northward. July and Aug. — Leaves 2′ – 4′ long. Panicle 1° – 2° long.

3. ECHINODORUS, Richard.

Flowers perfect, mostly in whorled racemes. Sepals 3. Petals 3, imbricated in the bud, withering. Stamens few or numerous. Ovaries few or many, imbricated, forming ribbed achenia in fruit, usually beaked with the persistent style. — Herbs, with petioled nerved leaves. Heads mostly bur-like.

1. **E. parvulus,** Engelm. Small; leaves lanceolate or spatulate, mostly acute, finely nerved and somewhat pinnately-veined, commonly shorter than the single or clustered 1 – 6-flowered scapes; flowers mostly clustered or umbelled, on long bracted pedicels which are recurved in fruit, stamens 9; achenia few, shorter than the ovate sepals, obovate, flattened at the sides, and surrounded with 5 prominent ribs, beakless. — Margins of shallow ponds, Middle Florida, and westward. July and Aug. — Scapes 1′ – 4′ high. Achenia black and shining.

2. **E. rostratus,** Engelm. Leaves varying from lanceolate to ovate, acute at each end, or rounded or cordate at the base, 5-nerved, about as long as the petiole; scape rigid, erect, longer than the leaves; whorls few; pedicels erect or spreading; sepals ovate, many-nerved, shorter than the oval bur-like head; stamens 12; style longer than the ovary; achenia numerous, strongly 3-ribbed on the back, with fainter lateral and intermediate ribs, beaked with the long persistent style. — South Florida, and westward. — Scape simple, 3′ – 8′ high, or occasionally 2° high and paniculately branched. Leaves 1′ – 2′ long. Flowers 5″ wide.

3. **E. radicans,** Engelm. Leaves large, long-petioled, ovate, cordate or truncate at the base, obtuse, 7 – 9-ribbed; scape elongated, prostrate, rooting and proliferous; whorls several, remote; pedicels slender, spreading, or recurved; stamens about 20; style shorter than the ovary; heads globose, longer than the many-nerved sepals; achenia very numerous, short-beaked, ribbed and slightly denticulate on the back. (Alisma radicans, *Nutt.*) — Swamps, Florida to North Carolina, and westward. July – Sept. — Scape 2° – 4° long. Leaves 3′ – 8′ long. Flowers 8″ – 12″ wide.

4. SAGITTARIA, L. Arrow-grass.

Flowers monœcious, in a whorled raceme, the upper ones sterile. Sepals 3, persistent. Petals 3, imbricated in the bud, withering. Stamens few or many. Ovaries crowded in a globular head. Achenia flat, membranaceous, winged. — Marsh or aquatic herbs, with scape-like stems, and variously-shaped nerved and

reticulated sheathing leaves, which are often without a blade. Flowers white, commonly 3 in a whorl from the axils of persistent bracts.

** Filaments long and slender.*

1. **S. falcata,** Pursh. Tall; leaves erect, rigid, broadly lanceolate, acute at each end, pinnately nerved, on long and stout petioles; scape longer than the leaves, often branching above; pedicels of the sterile flowers slender, longer than those of the fertile ones; bracts and sepals ovate, obtuse, granular-roughened; stamens numerous, with hairy filaments; achenia obliquely obovate, wing-keeled, strongly beaked. (S. lancifolia, *Michx.*) — Lakes and rivers, Florida to South Carolina, and westward. June – Sept. — Scape 2° – 5° high. Leaves 1° – 2° long. Flowers 1′ – 1½′ wide.

2. **S. variabilis,** Engelm. Leaves mostly sagittate, acute or obtuse, varying from linear to broadly ovate, smooth, or rarely, like the scape, bracts, and sepals, pubescent; bracts acute; flowers mostly large; pedicels of the sterile flowers twice as long as those of the fertile ones; achenia obovate, beaked; filaments smooth. (S. sagittifolia, hastata, pubescens, &c. *of authors.*) — Marshes, ditches, &c., Florida, and northward. July – Sept. — Scape 1° – 3° high, angled. Leaves 2′ – 12′ long.

** * Filaments short, thickened at the base.*

3. **S. heterophylla,** Pursh. Scape weak; leaves linear or lanceolate, and acute at each end, or elliptical, and obtuse or sagittate at the base; bracts obtuse; sterile flowers on long and slender pedicels; the fertile ones nearly sessile; achenia narrowly obovate, long-beaked. — Margins of ponds and streams, Florida, and northward. — Leaves 2′ – 4′ long. Scape few-flowered, the lowest whorl only bearing fertile flowers.

4. **S. simplex,** Pursh. Scape slender, commonly prostrate in fruit, simple or branched; leaves linear or lanceolate, acute at each end, 3-nerved, erect, the earliest mostly destitute of a blade; bracts membranaceous; flowers small, all on long filiform pedicels; stamens 10 – 12, hairy at the base; achenia obovate, wing-keeled, beakless. (S. graminea, *Michx.*) — Shallow ponds in the pine barrens, Florida, and northward. May – Oct. — Scape 10′ – 15′ high, usually longer than the leaves.

5. **S. natans,** Michx. Small; leaves floating, ovate-oblong or elliptical, obtuse at each end or the lowest slightly cordate, 5 – 7-nerved, about as long as the few-flowered scape; bracts membranaceous, acute; pedicels of the fertile flowers stouter than those of the sterile ones, recurved in fruit; stamens 7 or 8; achenia obovate, 3-ribbed on the back, short-beaked. — Shallow ponds and streams, Florida to South Carolina. June – Sept. — Scapes 3′ – 6′ long. Leaves 1′ – 2′ long.

Var. **lorata.** Leaves strap-shaped, obtuse, without a blade, nerveless; scapes floating or erect; flowers sometimes diœcious; achenia conspicuously beaked, pimpled. — Brackish water, along the west coast of Florida. May – Sept. — When growing in deep water the floating scapes are 2° – 3° long; when on muddy banks, only 3′ – 5′ high, and the short leaves bear much resemblance to those of Crantzia lineata. In this state it is probably S. pusilla, *Pursh.*

ORDER 140. HYDROCHARIDACEÆ. (FROG'S-BIT FAMILY.)

Aquatic herbs, with monœcious or diœcious flowers, from a membranaceous spathe. Sepals and petals 3, or the latter wanting, distinct in the sterile flower, united into a tube in the fertile, and coherent with the 1 – 9-celled ovary. Stamens 3 – 12. Ovules numerous, ascending, orthotropous. Stigmas 3 – 9. Fruit indehiscent, many-seeded. Embryo straight, without albumen.

Synopsis.

* Ovary 1-celled. Stigmas 3.

1. ANACHARIS. Flowers polygamo-diœcious. Spathe sessile. Stamens 9. Leaves short, opposite or whorled.
2. VALLISNERIA. Flowers diœcious. Spathe peduncled. Stamens 3. Leaves long, linear.

* * Cells of the ovary and stigmas 6 – 9.

3. LIMNOBIUM. Flowers monœcious. Stamens 6 – 9, monadelphous. Leaves cordate, petioled.

1. ANACHARIS, Rich.

Flowers diœciously polygamous, enclosed in the bud in a 2-cleft axillary sessile spathe. Sterile flowers minute. Sepals and petals 3. Anthers 9. Fertile flowers pistillate or perfect. Sepals and petals united into a very long and slender 6-parted tube. Stamens 3 – 6, perfect or sterile. Ovary 1-celled, with three parietal placentæ, few-ovuled. Style capillary, adnate to the tube. Stigmas 3, each 2-lobed, exserted. Fruit oblong, coriaceous. — Perennial herbs, with elongated filiform branching immersed stems, and small and very numerous opposite or whorled leaves. Fertilization effected by the sterile flowers breaking away from the stem, and expanding at the surface among the floating stigmas.

1. **A. Canadensis,** Planch. Stem much branched; leaves 3 – 4 in a whorl, sessile, varying from linear to elliptical, 1-nerved, pellucid and minutely serrulate. (Udora Canadensis, *Nutt.*) — In slow-flowing streams and ponds, Cherokee, North Carolina, *Curtis*, and northward. July and Aug. — Leaves 3″ – 6″ long.

2. VALLISNERIA, Micheli. TAPE-GRASS.

Flowers diœcious. Sterile flowers numerous, minute, crowded on a spadix, which is enclosed in an ovate 3-leaved short-stalked spathe. Calyx 3-parted. Corolla none. Stamens 3. Fertile flowers solitary, enclosed in a tubular spathe, and borne on a very long and mostly spiral scape. Sepals and small petals 3, united and coherent with the cylindrical 1-celled many-ovuled ovary. Stigmas 3, each 2-lobed. Seeds numerous, fixed to three parietal placentæ. — Aquatic herbs, with creeping stems, and elongated strap-shaped leaves. Fertilization effected mostly as in Anacharis.

1. **V. spiralis,** L. — Slow-flowing streams and ponds, Florida, and northward. July – Sept. ♃ — Plant creeping, proliferous. Leaves strap-shaped, obtuse, 5 – 9-nerved, sharply serrulate, 1° – 3° long, 6″ – 12″ wide. Scape of the sterile flowers 1′ – 4′ long, of the fertile ones 2° – 5° long. Fruit 1′ – 3′ long, often curved.

3. LIMNOBIUM, Richard.

Flowers monœcious, from a membranaceous mostly sessile spathe, peduncled. Sterile spathe entire, 2 – 3-flowered; the fertile 3-leaved, 1-flowered. Sepals and petals 3, united in the fertile flower, and coherent with the ovary. Stamens 6 – 12, monadelphous: anthers linear. Ovary 6 – 9-celled, with as many central placentæ, forming a many-seeded berry in fruit. Stigmas 6 – 9, each 2-parted. — A floating aquatic herb, with copious pendent roots, long-petioled round-cordate and many-nerved leaves, and small white flowers.

1. **L. Spongia,** Richard. Stems extensively proliferous; leaves purplish beneath, and with air-cells near the base; sterile peduncles tender, soon vanishing; the fertile ones commonly short and thick, recurved in fruit; petals oblong, alternating in the fertile flower with a pair of minute sterile filaments. (Hydrocharis spongiosa, *Bosc.*) — Still water, Florida, and northward. July and Aug. ♃ — Leaves 2′ – 4′ wide.

Order 141. BURMANNIACEÆ. (Burmannia Family.)

Small herbs, with filiform stems, scale-like leaves, and regular perfect flowers. — Sepals and petals united to form a tubular unequally 6-cleft corolla-like perianth, with the tube coherent with the 1 or 3-celled many-ovuled ovary. Stamens 3 or 6, inserted on the tube of the perianth: anther-cells separate, 2-lobed, opening crosswise. Style slender: stigmas 3, dilated. Placentæ 3, central or parietal. Capsule many-seeded. Seeds minute, with a loose or reticulated testa.

1. BURMANNIA, L.

Tube of the perianth mostly 3-angled or 3-winged, 6-cleft, withering-persistent; the three interior lobes smaller. Stamens 3, very short, inserted opposite the interior lobes of the perianth. Ovary 3-celled, with three thick 2-lobed central placentæ. Stigmas globose, dilated or 2-lobed. Capsule splitting at the apex into 3 valves. — Radical leaves crowded and grass-like, or none; those of the stem minute, scale-like. Flowers racemose or clustered.

1. **B. biflora,** L. Stem simple, or forked above, 1 – several-flowered; leaves subulate, scattered; perianth blue, broadly 3-winged, the exterior lobes erect, ovate, acute, the interior linear and incurved; seeds oblong, striate. (Tripterella cœrulea, *Michx.*) — Grassy or mossy margins of swamps and ponds, Florida to North Carolina. Sept. – Nov. — Stem 1′ – 5′ high. In this and the following species the seeds escape through irregular fissures at the sides of the capsule.

2. **B. capitata.** Stems setaceous, simple; leaves subulate, scattered; flowers several in a terminal cluster, white, tinged with blue; perianth 3-angled, wingless, the interior lobes linear, erect; seeds linear-oblong, spirally striate. (Tripterella capitata, *Michx.*) — Low or swampy pine barrens, Florida to North Carolina. Sept. – Nov. — Stems 2′ – 6′ high.

2. APTERIA, Nutt.

Perianth terete, tubular-bell-shaped, 6-cleft, with the 3 interior lobes smaller. Stamens 3, very short, opposite the interior lobes of the perianth, the filaments flat and orbicular at the apex: anthers closely adhering to the globose stigmas. Ovary 1-celled, with three 2-winged parietal placentæ. Capsule obovate, splitting from the base into three valves, which remain attached to the apex of the persistent placentæ. Seeds ovoid. — A small perennial herb, with subulate bract-like leaves, and scattered nodding flowers.

1. **A. setacea,** Nutt. Deep shady woods, along the margins of swamps, Florida, Georgia, and westward. Sept. and Oct. — Stem erect or ascending, purple, filiform, simple or branched, 2′ – 8′ high. Leaves scattered. Flowers few, distant, on nodding pedicels. Perianth white, 5″ long.

ORDER 142. ORCHIDACEÆ. (ORCHIS FAMILY.)

Perennial herbs, with simple stems, from thick fibrous or tuberous roots, nerved leaves, and irregular often showy flowers. — Perianth 6-parted, united below with the 1-celled ovary; the three outer divisions (calyx) and commonly two of the inner ones (petals) similar in form; but the third, posterior, or, by the twisting of the ovary, anterior one (*Labellum* or *Lip*) differs from the others in form, and often bears a spur or prominence at the base beneath. Stamens 3, united with the style into a column, one or (in Cypripedium) two only bearing a 2-celled anther. Pollen-grains cohering in 2, 4, or 8 waxy or powdery masses (*Pollinia*). Capsule with three parietal placentæ, splitting at the sides into three valves. Seeds very numerous, minute, covered with a loose membranaceous testa. Albumen none. — Plants mostly smooth and more or less succulent. Leaves almost always alternate, sheathing and entire. Stems leafy or scape-like. Flowers bracted, solitary, spiked, or racemed, and remarkable for their various and singular forms.

Synopsis.

I. Anther solitary, fixed to the apex of the column like a lid, deciduous.

TRIBE I. **MALAXIDEÆ.** — Pollen in smooth waxy masses, without stalks or connecting tissue. — Roots tuberous.

* Stems leafy.

1. MICROSTYLIS. Lip cordate or sagittate. Column minute, 2-toothed at the apex.
2. LIPARIS. Lip entire. Column elongated, incurved, margined at the apex.

* * Stems sheathed.

3. CORALLORHIZA. Spur of the lip short and adnate to the ovary. Root branching, toothed.

4. APLECTRUM. Lip spurless. Root of two solid connected tubers, bearing a single leaf.

TRIBE II. **EPIDENDREÆ.** — Pollen in smooth waxy masses connected by elastic tissue.

5. EPIDENDRUM. Pollen-masses 4. Claw of the spurless lip adnate to the column.

6. TIPULARIA. Pollen-masses 4. Lip free, spurred. Stem sheathed.

7. BLETIA. Pollen-masses 8. Lip free, hooded, spurless.

TRIBE III. **ARETHUSEÆ.** — Pollen in loose powdery masses. Lip crested.

8. CALOPOGON. Pollen-masses 2, bipartible. Column incurved, winged at the apex.

9. POGONIA. Pollen-masses 2. Column wingless, club-shaped.

10. ARETHUSA. Pollen-masses 4. Column petal-like. Root a solid tuber.

II. Anther solitary, adnate to the column, erect, persistent.

TRIBE IV. **OPHRYDEÆ.** — Anther adnate to the apex of the column, the cells separate. Pollen cohering in numberless waxy grains, which are collected by elastic tissue into a large mass, and attached to a gland of the stigma by an elastic stalk. Lip spurred.

11. ORCHIS. Anther-cells contiguous, parallel. Glands of the stigma covered with a common hood-like fold of the stigma.

12. GYMNADENIA. Anther-cells contiguous, parallel. Glands of the stigma naked.

13. PLATANTHERA. Anther-cells diverging from the base. Glands of the stigma naked.

14. HABENARIA. Anther-cells diverging. Glands naked. Throat of the stigma furnished with variously shaped appendages.

TRIBE V. **NEOTTIEÆ.** — Anther attached to the back of the column, parallel with the stigma; the cells approximate. Pollen powdery.

* Pollen-masses 2.

15. SPIRANTHES. Lip nearly entire, clasping the column, obtuse.

16. GOODYERA. Lip sessile, entire, contracted above the middle, slender-pointed.

17. LISTERA. Lip 2-cleft. Stem with a pair of ovate opposite leaves.

* * Pollen-masses 4.

18. PONTHIEVA. Claws of the petals and lip adnate to the column.

III. Anthers two, fixed beneath the lateral lobes of the column.

TRIBE VI. **CYPRIPEDIEÆ.** — Column appendaged by the petal-like sterile stamen.

19. CYPRIPEDIUM. Lip large, inflated. Leaves large, plaited.

1. MICROSTYLIS, Nutt. ADDER'S-MOUTH.

Sepals oblong, spreading. Petals filiform. Lip cordate or sagittate, entire or nearly so, sessile. Column minute, 2-toothed at the apex. Anther lid-like. Pollen-masses 4, collateral, united by pairs at the apex. — Low herbs, from bulbous roots. Stem 1 – 2-leaved, sheathed below. Flowers racemed or spiked, minute, greenish.

1. **M. ophioglossoides,** Nutt. Leaf solitary near the middle of the 5-angled stem, ovate, clasping; raceme short, with the unexpanded flowers crowded in a globular head, elongated in fruit; pedicels slender, much longer than the flowers; lip auricled at the base, 3-toothed at the apex. (Malaxis ophioglossoides, *Muhl.*) — Low shady woods, Florida, and northward. July and Aug. — Stem 4′ – 8′ high. Leaf 1′ – 2′ long. Flowers $\frac{1}{2}$″ wide.

2. **M. Floridana,** n. sp. Leaves 2, near the base of the 3-angled stem, unequal, ovate, or elliptical, mostly acute, sheathing; raceme slender, acute, elongated in fruit, many-flowered; pedicels longer than the flowers; sepals oblong, spreading, with the margins revolute; petals filiform, reflexed, twisted; lip round-auriculate-cordate, abruptly narrowed and entire at the apex, depressed at the sinus; capsule oblong or obovate. — Wet shady woods, Apalachicola, Florida. July and Aug. — Stem 6′ – 12′ high. Leaves 1′ – 4′ long. Flowers 1″ wide.

2. LIPARIS, Richard. TWAYBLADE.

Sepals spreading. Petals linear or filiform, spreading or reflexed. Lip entire, flat, often with two tubercles above the base. Column long, semi-terete, incurved, margined at the apex. Pollen-masses 4, collateral, united by pairs at the apex. — Low herbs, from bulbous roots. Leaves 2, sheathing the base of the scape-like stem. Flowers racemed, greenish or purplish.

1. **L. liliifolia,** Richard. Leaves elliptical, obtuse, sheathed at the base; scape 3-angled, 10 – 20-flowered, longer than the leaves; sepals linear, whitish; petals filiform, reflexed, yellowish; lip large, wedge-obovate, concave, abruptly pointed, brownish-purple. (Malaxis liliifolia, *Swartz.*) — Low shady woods and banks in the upper districts, Georgia, and northward. June and July. — Scape 5′ – 10′ high. Leaves 2′ – 4′ long. Lip ½′ long.

3. CORALLORHIZA, Haller. CORAL-ROOT.

Sepals and petals alike, oblong or lanceolate, connivent. Lip clasping the base of the straight 2-edged column, spreading and concave above, 2-ridged near the base, spurless, or with the spur adnate to the ovary. Anther lid-like. Pollen-masses 4, incumbent. — Low dull-colored leafless herbs, with coral-like roots, sheathed stems, and racemose flowers.

1. **C. odontorhiza,** Nutt. Root pinnately branched and toothed; stem tumid at the base, slender above; sheaths 3, elongated; racemes 10 – 15-flowered; sepals and the rather shorter spotted petals erect, lanceolate, obtuse; lip entire, longer than the sepals, distinctly clawed, the spreading limb oval, concave, 3-nerved, with two tooth-like ridges in the throat, white spotted with purple; the margins crenulate below the middle and involute above; margins of the column thickened and incurved at the base; capsule oval, nodding. — Shady woods, Florida, and northward. Feb. and March. — Stem 8′ – 16′ high. Lip 4″ long.

2. **C. micrantha,** n. sp. Root toothed; stem low, rigid; sheaths 2, abruptly pointed; raceme 6 – 12-flowered; flowers very small (1″ – 1½″ long), erect; sepals and petals nearly equal, linear, erect; lip short-clawed, entire, oval, concave, denticulate on the margins, without teeth or ridges, shorter than the sepals, white spotted with purple; capsule obovate, nodding. — Shady woods, Florida and Georgia. Aug. and Sept. — Stem 3′ – 6′ high.

3. **C. innata,** R. Brown. Root branching; stem slender; sheaths 3; the upper one elongated and often leaf-like at the apex; raceme 5 – 12-flowered; lip

somewhat hastate, 3-lobed above the base, with two distinct ridges on the face, white spotted with crimson; sepals and petals oblong-lanceolate, brownish; capsule oval or elliptical. — Damp shady woods, Georgia, and northward. Sept. and Oct. — A vernal species in the Northern States.

4. APLECTRUM, Nutt. PUTTY-ROOT.

Sepals and petals alike, linear-oblong, erect. Lip spurless, short-clawed, 3-lobed and 3-ridged at the throat. Column straightish, cylindrical. Anther lid-like, slightly lateral. Pollen-masses 4. — Root tuberous, proliferous, very glutinous within, first bearing a single large plaited and petioled leaf, which is persistent through the winter, and afterward a 3-sheathed scape, with a raceme of yellowish flowers at the summit.

1. **A. hiemale,** Nutt. (Corallorhiza hiemalis, *Ell.* Limodorum trifidum, *Michx.*) — Rich woods, chiefly in the upper districts, and northward. April and May. — Leaf oval, many-nerved, 4′ – 6′ long. Scape 12′ – 15′ high, 10 – 15-flowered. Sepals and petals yellowish, tipped with brownish purple. Lip whitish, spotted, the middle lobe rounded and crenulate on the margins. Capsule reflexed.

5. EPIDENDRUM, L. TREE-ORCHIS.

Sepals and petals nearly equal and alike, widely spreading. Lip with the claw wholly or partly adnate to the elongated margined or winged column, entire or parted, mostly rigid or tubercled on the face. Spur none, or adnate to the ovary. Column prolonged at the apex into a toothed or fimbriate cup. Anther lid-like, somewhat 4-celled. Pollen-masses 4, lenticular, stalked. — Stemless herbs, from a tuberous or creeping rhizoma, clinging to the bark of trees by thick and matted roots. Leaves sheathing, rigid, perennial. Scape sheathed or bracted, bearing a raceme of greenish and purplish flowers.

1. **E. conopseum,** Ait. Scape few – many-flowered; leaves 1 – 3, coriaceous, lanceolate, acute, spreading; bracts subulate, the lowest somewhat leafy; sepals spatulate, obtuse, with revolute margins; petals linear-spatulate, obtuse; lip 2-tubercled at the base, 3-lobed, the lateral lobes rounded and crenulate, the middle one notched at the apex, the claw wholly adnate to the slightly margined column. — On various trees, but chiefly on Magnolias, Florida to South Carolina. Aug. — Scape 2′ – 8′ high. Leaves 1′ – 3′ long. Flowers 4″ – 5″ long, green tinged with purple.

2. **E. venosum,** Lindl. Scape tumid at the base, 5 – 7-flowered; leaves 2, linear-lanceolate, abruptly pointed; bracts short, ovate; sepals and petals spatulate-lanceolate, acute; lip 3-parted, 2-crested in the middle; the lateral lobes oblong, acute; the middle one wedge-shaped, notched at the apex, the claw partly adnate to the 2-winged column. — South Florida, *Dr. Blodgett.* — Scape 1° high, invested with numerous short whitish sheaths. Leaves 4′ – 5′ long. Flowers 8″ long.

6. TIPULARIA, Nutt.

Sepals and petals oblong, spreading. Lip long-spurred, 3-lobed, the lateral lobes short and triangular, the middle lobe linear. Spur filiform, ascending. Column slender, wingless. Anther lid-like. Pollen-masses 4, stalked, waxy. — Root tuberous, proliferous, first producing a single ovate leaf, on a sheathed petiole, afterward a slender sheathed scape, ending in a long raceme of numerous greenish flowers.

1. **T. discolor,** Nutt. — Shady banks, Florida, and northward. Aug. — Scape about 1° high. Leaf 1′ – 2′ long, acute, somewhat plaited and many-nerved, purple beneath. Flowers small, nodding, bractless. Spur about 1′ long.

7. BLETIA, Ruiz and Pavon.

Sepals and petals alike and nearly equal, spreading. Lip spurless, jointed, 3-lobed, crested on the face. Column free, elongated, semi-terete. Anther lid-like, fleshy. Pollen-masses 8, by pairs, with a stalk to each pair, waxy, becoming powdery. — Scape from tuberous rootstocks, sheathed or scaly, many-flowered. Leaves sheathing the base of the scape, narrow, plaited, sometimes wanting. Flowers spicate or racemose, mostly showy.

1. **B. aphylla,** Nutt. Leafless; scape stout, terete, tapering into the many-flowered spike; sheaths several, short, the upper ones passing into the ovate acuminate bracts; flowers spreading, brownish, striped with purple; sepals and petals oblong-lanceolate, oblique; lip concave, emarginate, with a 6-ridged crest along the middle, the lateral lobes erect. — Rich shaded soil, Florida to North Carolina, and westward. July and Aug. — Root consisting of horizontal, jointed tubers. Scape 1° – 1½° high. Perianth ¾′ long.

2. **B. verecunda,** Swartz. Scape leafy at the base, many-flowered; leaves lanceolate, plaited, strongly nerved; petals and sepals greenish, the former connivent; lip saccate, wavy and furrowed, emarginate. — Open pine barrens, Middle and East Florida. July. — Scape 1° – 1½° high. Leaves 6′ – 9′ long.

8. CALOPOGON, R. Brown.

Sepals unequal, the two lateral ones broader and oblique. Lip (by the untwisted ovary) brought to the upper or inner side of the flower, dilated at the apex, bearded on the face, and narrowed into a hinge-like claw. Column long, incurved, winged at the apex. Anther terminal, lid-like, sessile. Pollen-masses 2, powdery. — Scape erect from a solid tuber, sheathed at the base, bearing below the middle a single narrow sheathing leaf, and terminated with a loose spike of showy flowers.

1. **C. pulchellus,** R. Br. Scape 2 – 8-flowered; leaf linear-lanceolate, erect, keeled, many-nerved; flowers large, mostly approximate, bright purple; lateral sepals obliquely ovate, abruptly pointed, shorter than the lanceolate obtuse petals; lip broadly obcordate, acutely 2-eared at the base; filaments of the crest decurrent on the claw, the lower ones purple and united; ovary

straight, 2 – 3 times as long as the lanceolate-subulate bracts. — Swamps, Florida, and northward. June. — Scape $1\frac{1}{2}°$ – 2° high. Leaves 6′ – 12′ long. Flowers 1′ – $1\frac{1}{2}$′ wide.

2. **C. pallidus,** n. sp. Scape 10 – 20-flowered; leaf linear, erect, keeled, few-nerved; flowers scattered, white tinged with purple; lateral sepals obliquely oblong, shorter than the linear-lanceolate acute petals; lip wedge-obovate, abruptly short-pointed, obtusely 2-eared at the base; filaments of the crest mostly united and purple at the base; ovary straight, scarcely longer than the subulate bract. — Wet pine barrens, West Florida, near the coast, to North Carolina. May. — Scape 1° – $1\frac{1}{2}°$ high. Leaves 6′ – 9′ long. Flowers 9″ – 12″ wide.

3. **C. parviflorus,** Lindl. Scape 3 – 6-flowered; leaf linear, concave, appressed to the scape; flowers approximate, bright purple; lateral sepals oblong, curved, acute, longer than the oblong-lanceolate, obtuse petals; lip wedge-obovate, emarginate, winged at the base; filaments of the crest all yellow and distinct; ovary curved, four times as long as the ovate-acuminate bract. (C. pulchellus, var. graminifolius, *Ell.*) — Wet pine barrens, Florida to North Carolina. March and April. — Scape 6′ – 12′ high. Leaves 3′ – 5′ long. Flowers 8″ – 10″ wide.

4. **C. multiflorus,** Lindl. Scape 7 – 14-flowered; leaves mostly two, linear, rigid, concave, erect; flowers approximate, deep purple; lip wedge-shaped, pointed, winged at the base, bearded in the middle with uniform, filiform hairs; sepals and petals ovate, acute. — South Florida. — Plant 1° high. Leaves 3′ – 5′ long. Flowers of the size of the preceding.

9. POGONIA, Juss.

Sepals and petals alike, or the former narrower and elongated. Lip mostly crested and 3-lobed. Column club-shaped, wingless. Anther lid-like, stalked. Pollen-masses 2, powdery. — Stems erect from thick fibrous or tuberous roots, sheathed at the base, few-leaved, 1- or few-flowered. Leaves alternate or whorled. Flowers nodding, showy.

* *Sepals and petals nearly alike, erect.*

1. **P. ophioglossoides,** Nutt. Root fibrous; leaves 2, sessile, lanceolate, the upper one terminal and smaller; flower mostly solitary, terminal, sessile, pale rose-color; sepals lanceolate, as long as the oval or oblong petals; lip spatulate, flat, yellow-crested, fimbriate on the margins, longer than the petals, and twice as long as the thick column. — Swamps, Florida, and northward. April and May. — Stem 6′ – 12′ high. Flowers $\frac{1}{2}$′ long.

2. **P. pendula,** Lindl. Root tuberous; leaves several, short, alternate, ovate, clasping; flowers 3 – 7, axillary, long-peduncled, drooping, whitish; sepals and petals lanceolate, acute; lip spatulate, somewhat 3-lobed, roughened but not crested, rather shorter than the petals, longer than the column. (Triphora pendula, *Nutt.*) — Rich shady woods, Middle Florida, and northward. July and Aug. — Stem 4′ – 8′ high. Leaves 6″ – 9″ long.

* * *Sepals (brown) linear, spreading, much longer than the erect petals: lip crested, 3-lobed.*

3. **P. divaricata,** R. Br. Leaves 2, sessile, lanceolate, one near the middle of the stem, the other smaller and bract-like at the base of the solitary terminal flower; sepals purplish-brown, broadly linear, and, like the flesh-colored lanceolate petals, recurved at the apex; lip half-cylindrical, wavy and crenulate on the margins, 3-lobed at the apex, greenish veined with purple; crest beardless. — Swamps, Florida to North Carolina. May. — Stem 1° – 2° high. Leaves 2′ – 5′ long. Sepals 1′ – 1½′ long.

4. **P. verticillata,** Nutt. Leaves 5, obovate-oblong, abruptly pointed, whorled at the base of the solitary reddish-brown flower; sepals linear, spreading, 3 times as long as the erect oblong yellowish petals, and yellowish 3-lobed wavy lip. — Low shady woods, Florida, and northward. May. — Stem 1° high. Leaves enlarged in fruit. Flower peduncled. Sepals 2′ long.

10. ARETHUSA, Gronov.

Sepals and petals alike and nearly equal, cohering at the base, arching and connivent over the column. Lip adnate to the base of the column, dilated and bent downward above the middle, crested within. Column incurved, expanded and petal-like at the apex. Anther terminal, lid-like, with the cells approximate. Pollen-masses 4, powdery. — Scape erect from a solid globular tuber, sheathed, bearing a single large terminal flower.

1. **A. bulbosa,** L. — Bogs on the mountains of Carolina, *Michaux,* and northward. May. — Scape 6′ – 9′ high. Sheaths 3 – 4, the uppermost enclosing a linear late-developed leaf. Flower 1′ – 2′ long, 2-bracted, bright purple and fragrant.

11. ORCHIS, L. Orchis.

Sepals and petals nearly equal, arching and connivent over the column, or the lateral sepals spreading. Lip adnate to the base of the column, depending, spurred at the base. Anther terminal, erect, the cells contiguous and parallel. Pollen-masses 2, waxy, stalked, and, with the two distinct glands, enclosed in a common sac or fold of the stigma. — Stem mostly scape-like, leafy at the base. Flowers showy, spiked.

1. **O. spectabilis,** L. Leaves 2, obovate-oblong, about as long as the 3 – 5-flowered 5-angled scape; bracts lanceolate, leafy, mostly longer than the flowers; sepals and petals connivent, oblong, purple; lip white, obovate, entire, crenulate, as long as the club-shaped spur. — Rich shady woods in the upper districts, and northward. May. — Root of thick clustered fibres. Scape 4′ – 6′ high. Flowers 6″ – 8″ long.

12. GYMNADENIA, R. Brown.

Sepals and petals nearly equal, the lateral sepals spreading, the upper, with the rather shorter petals, arching and connivent over the short column. Lip

adnate to the base of the column, spurred at the base. Anther erect, the cells contiguous and parallel. Pollen-masses waxy, fixed by a stalk to the naked glands of the stigma. — Stems leafy. Flowers small, spiked.

** Ovary twisted; the lip therefore anterior.*

1. **G. flava,** Lindl. Stem slender (1° high); lowest leaf (4′ – 6′ long) lanceolate, sheathing, the others (6 – 8) small, the uppermost passing into the subulate bracts of the short (1′ – 2′ long) oblong densely many-flowered spike; flowers orange-yellow; lip ovate, slightly crenate; spur filiform, depending, shorter than the ovary. (Orchis flava, *Nutt.*, not of *Linn.*) — Open grassy swamps in the pine barrens, Florida, and northward. July and Aug.

2. **G. tridentata,** Lindl. Stem (9′ – 12′ high) scape-like above; lowest leaf (4′ – 6′ long) lanceolate-oblong, tapering into a sheathing base, obtuse, the others small, scattered, passing into the bracts; spike (1′ – 2′ long) loosely 4 – 12-flowered; flowers yellowish-green; lip truncate, 3-toothed at the apex, longer than the petals; spur slender, club-shaped at the apex, curving upward, longer than the ovary. (Orchis clavellata, *Michx.*) — Low shady woods in the upper districts, Mississippi to North Carolina, and northward. July.

*** Ovary straight: lip posterior.*

3. **G. nivea,** Gray & Engelm. Stem slender (1° – 1½° high); leaves numerous, one or two of the lower ones linear (4′ – 8′ long), the others small and bract-like; spike (2′ – 4′ long) cylindrical, loosely many-flowered; flowers white; lateral sepals ovate, slightly eared at the base; petals and entire lip linear-oblong; spur filiform, ascending, as long as the white roughish ovary. (Orchis nivea, *Nutt.*) — Pine-barren swamps, Florida, Georgia, and westward. July.

13. PLATANTHERA, Richard.

Sepals and petals nearly equal, the lateral sepals mostly spreading or reflexed. Lip entire or variously lobed or divided, spurred at the base. Column short. Anther-cells diverging. Stigma without appendages, with the glands naked. — Root composed of thick fleshy fibres. Stems mostly leafy. Flowers spiked or racemed, commonly showy.

** Lip entire, neither toothed nor fringed.*

1. **P. orbiculata,** Lindl. Leaves two, at the base of the scape-like bracted stem, large, orbicular, fleshy, spreading on the ground, silvery beneath; flowers greenish-white, in a narrow and loose raceme, longer than the bracts; lateral sepals obliquely ovate, spreading, the upper orbicular; petals narrower; lip linear-spatulate, entire, recurved; spur very long, club-shaped, curved. — Shady woods on the mountains of North Carolina, and northward. July and Aug. — Scape 1° – 1½° high. Leaves 5′ – 8′ in diameter.

*** Lip 3-toothed or 3-lobed: flowers spiked: stem leafy.*

2. **P. flava,** Gray. Leaves 3 – 4; the two lower ones lanceolate or oblong-lanceolate (4′ – 8′ long), the others small and bract-like; flowers small, brownish green, in a loose and slender many-flowered spike; sepals and petals oval; lip oblong, hastate – 3-lobed, the lateral lobes short and rounded, the middle one

crenulate at the apex and bearing a tooth-like appendage at the throat; spur club-shaped, mostly shorter than the short ovary. (Orchis flava, *L.* O. fuscescens, and O. bidentata, *Ell.*) — Low shady banks, Florida, and northward. July and Aug. — Stem 1° high. Flowers 2″ in diameter.

3. **P. bracteata,** Torr. Lower leaves obovate, the others smaller, lanceolate; flowers small, greenish; sepals and narrow petals erect; lip oblong-linear, slightly 3-toothed at the tip, longer than the obtuse sac-like spur. (Orchis viridis, *Pursh.*) — High mountains of Carolina, *Pursh.* — Stem low. Bracts large, conspicuous.

** * * Lip undivided, fringed: flowers spiked: stems leafy.*

4. **P. ciliaris,** Lindl. Leaves numerous, the lower ones (4′ – 12′ long) lanceolate or oblong, the upper small and bract-like: spikes oval or oblong, rather loosely flowered; flowers large, bright yellow; lateral sepals round-obovate, reflexed; petals lanceolate, incised or slightly fringed at the apex; lip clawed, roundish in outline, long-fringed; spur filiform, commonly longer than the long tapering ovary. (Orchis ciliaris, *L.*) — Var. BLEPHARIGLOTTIS (Orchis blephariglottis, *Willd.*) has white flowers, and shorter fringe of the lip. — Swamps and bogs, chiefly in the pine barrens, Florida, and northward. Aug. — Stem 1½° – 2° high. Spike 1½′ – 2′ in diameter. Ovary 9″ – 15″ long. Flowers 6″ – 8″ wide.

5. **P. cristata,** Lindl. Leaves numerous, the lower ones (4′ – 8′ long) lanceolate, the uppermost bract-like; spike oblong or cylindrical, densely flowered; flowers small, yellow; lateral sepals rounded, spreading, concave; petals oblong, incised at the apex; lip sessile, ovate in outline, pinnatifid-fringed; spur filiform, half as long as the tapering ovary. (Orchis cristata, *Michx.*) — Bogs and swamps, Florida, and northward. Aug. — Stem 1° – 2° high. Spike 1′ in diameter. Ovary 5″ – 6″ long. Flowers 2″ – 3″ wide.

** * * * Lip 3-parted, fringed or denticulate: flowers in spiked racemes: stem leafy.*

+– Flowers yellowish-white.

6. **P. lacera,** Gray. Stem slender; lower leaves oblong, the uppermost small, passing into the lanceolate bracts; raceme oblong, loosely flowered; petals oblong-linear, entire; lip pendent, the wedge-shaped lobes deeply divided into few spreading capillary filaments; spur as long as the ovary. (Orchis lacera, *Michx.*) — Swamps and low ground in the upper districts, and northward. July. — Stem 1° – 2° high. Lower leaves 3′ – 6′ long. Raceme 3′ – 5′ long.

+– +– Flowers purple: lip clawed.

7. **P. psycodes,** Gray. Stem stout; lower leaves lanceolate or oblong, the upper small, passing into the linear-subulate bracts; flowers pale purple, crowded in a dense oblong raceme; lateral sepals roundish, obtuse; petals obovate, minutely denticulate at the apex; lip nearly twice as long as the sepals, spreading, the wedge-shaped lobes bordered with a short fringe. (Orchis psycodes, *L.*) — Swamps and shaded banks, North Carolina, and northward. July. — Stem 2° high. Lower leaves 3′ - 6′ long. Flowers very numerous. Lip 2″ – 3″ long.

8. **P. fimbriata,** Lindl. Stem stout; leaves oval or oblong, obtuse, a few of the upper ones small and lanceolate like the bracts; raceme oblong, rather loosely flowered; flowers large, pale purple; lateral sepals ovate, acutish; petals oblong, denticulate on the margins; lip twice as long as the sepals, spreading, the broad wedge-shaped lobes long-fringed; spur longer than the ovary. — Wet meadows, North Carolina, and northward. June. — Stem 2° – 3° high. Leaves 4′ – 6′ long. Flowers not numerous on the raceme. Lip 6″ – 9″ long.

9. **P. peramœna,** Gray. Stem stout; lower leaves oblong, obtuse, the upper lanceolate like the bracts; raceme oblong, rather loosely flowered; flowers large, violet-purple; lateral sepals broad-ovate; petals round-obovate, minutely denticulate; lip spreading, the wedge-shaped lobes finely toothed, entire, or the middle one 2-lobed; spur longer than the ovary. (Orchis fissa, *Pursh.*) — Mountains of North Carolina, and northward. July. — Stem 2° – 4° high. Lip 9″ long.

14. HABENARIA, Willd.

Sepals nearly equal, the lateral ones reflexed. Petals entire or 2 – 3-parted. Lip pendent, entire, or 2 – 3-parted, spurred. Anther-cells erect, separate, diverging. Stigma bearing two various-shaped appendages. Glands naked. Pollen-masses 2, waxy, stalked. — Herbs with tuberous roots, leafy stems, and spiked flowers.

1. **H. repens,** Nutt. Root a creeping tuber; stem erect or ascending, very leafy; leaves lanceolate, acute or acuminate, 3-ribbed; spike slender, many-flowered; bracts lanceolate, the lower ones longer than the flowers; lateral sepals oblong, acute, the upper one ovate, erect; petals unequally 2-parted, the lower lobe capillary, longer than the linear upper one; lip 3-parted, barely longer than the sepals, the lateral lobes capillary, the middle one filiform; spur as long as the ovary; appendages of the stigma tubercular. — Swamps and ditches in the lower districts, Florida to North Carolina, and westward. Aug. and Sept. — Stem 1° – 2° long. Leaves 6′ – 12′ long. Spikes ½° – 1° long. Flowers small, greenish.

2. **H. Michauxii,** Nutt. Root a globular watery tuber; stem erect; leaves oval or oblong, mostly acute, many-nerved, the upper smaller, and similar to the ovate-lanceolate clasping bracts; spike slender, loosely few-flowered; lateral sepals oblong-ovate, acute, the upper one ovate, erect; petals unequally 2-parted, the lower lobe capillary and twice as long as the lanceolate upper one; lip twice as long as the sepals, 3-parted, the capillary lateral lobes longer than the linear middle one; spur twice as long as the ovary; appendages of the stigma tubercular. — Dry sandy or gravelly soil, Florida, to South Carolina. August. — Stem 6′ – 18′ high. Leaves 2′ – 3′ long. Spike 3′ – 5′ long. Flowers white, twice as long as those of the preceding.

15. SPIRANTHES, Richard. Twisted Orchis.

Sepals and petals nearly equal; the lateral sepals diverging, dilated at the base, the upper one connivent with the petals. Lip clawed, concave, furnished with two callosities near the base, clasping the short column below. Stigma ovate,

beaked. Anther attached to the back of the column. Pollen-masses 2, obovate, 2-cleft, fixed to a common gland of the stigma, powdery. — Root composed of few clustered tubers or fleshy fibres. Stem leafy at the base, sheathed above. Flowers small, white, in a regular 1-sided or spirally twisted spike.

* *Flowers on all sides of the untwisted spike.*

1. **S. cernua,** Richard. Stem smooth below, the upper portion and thick crowded spike pubescent; lowest leaves long, linear-lanceolate, the others bract-like and sheathing; bracts ovate-lanceolate, acuminate, longer than the capsule; flowers recurved; lip longer than the sepals, contracted above the middle, wavy at the recurved obtuse apex, 2-toothed at the base. — Grassy swamps and meadows, Florida to Mississippi, and northward. October. — Stem 6′ – 12′ high. Leaves 4′ – 8′ long. Flowers yellowish-white, 3″ – 4″ long.

* * *Spikes twisted, bringing the flowers into a single straight or spiral row.*

2. **S. brevifolia,** n. sp. Stem pubescent above; leaves all bract-like and sheathing, or the lowest expanding into a short (1′ – 2′) lanceolate or linear early withering blade; flowers all on one side of the rachis or sparingly spiral, horizontal, pubescent; bracts ovate, acute, scarcely longer than the ovary; sepals and petals equal; lip oblong or elliptical, very entire, wavy on the margins, recurved at the acute or obtuse apex, and with two tooth-like prominences at the base. — Open grassy swamps in the pine barrens, Apalachicola, Florida. Oct. and Nov. — Root of 3 fleshy fibres. Stem 1° high. Flowers 10 – 20, 3″ – 4″ long, white.

3. **S. odorata,** Nutt. Stem′ stout, leafy; lower leaves oblong-lanceolate, acute, the others diminishing upward and passing into the large lanceolate acuminate bracts; spike thick, pubescent, densely flowered, spiral; bracts much longer than the ovary, the lower ones as long as the recurved flowers; sepals and petals equal; lip entire, recurved, oblong, dilated and crenulate at the apex, and with two tooth-like hooked prominences at the base. — Muddy banks of rivers, near Marianna, Florida to North Carolina, and westward. October. — Stem 1° – 2° high. Lowest leaves 9′ – 15′ long, 1′ – 2′ wide. Flowers yellowish-white, ½′ long, fragrant.

4. **S. tortilis,** Willd. Stem tall and slender, pubescent above; lowest leaves linear, the upper small and bract-like; spike slender, pubescent, spiral; bracts ovate-lanceolate, acuminate, longer than the ovary; lip oblong, entire, recurved and crenulate at the apex, scarcely longer than the petals, with two gland-like prominences at the throat. — Low or marshy pine barrens, Florida to North Carolina. May. — Stem 1° – 2° high. Leaves 6′ – 10′ long. Flowers 3″ long, white.

5. **S. gracilis,** Bigelow. Stem very slender, smooth throughout, scape-like; lowest leaves (early withering) lanceolate or elliptical, spreading; spike very slender; flowers minute, on one side of the rachis or sparingly spiral, smooth; bracts ovate-lanceolate, clasping, shorter than the capsule; lip finely crenulate on the margins, recurved and acute at the apex, with two raised ear-like prominences at the base; anthers 4-cleft. — Damp soil, Florida, and northward. April and May. — Stem sheathed, 6′ – 12′ high. Lowest leaves 1′ – 2′ long. Flowers 1″ long.

16. GOODYERA, R. Brown. Rattlesnake Plantain.

Sepals and petals nearly equal, the two lateral sepals including the base of the sessile lip, the upper one connivent with the petals. Lip concave or sac-like, contracted above the middle into a recurved and channelled point. Anther attached to the dorsal apex of the short and free column. Pollen-masses 2, entire, powdery. — Stems leafy or scape-like, from a slender creeping rootstock, bearing a spike of small white flowers.

* *Stem scape-like, bracted: lip spurless: column manifest: anther round, beakless, radical leaves clustered.*

1. **G. pubescens,** R. Brown. Scape pubescent; radical leaves thick, ovate, discolored and reticulated above, contracted into a spreading petiole; spike lanceolate, densely many-flowered, pubescent; bracts lanceolate; sepals and petals roundish; lip sac-like, ending in a short, ovate point; stigma rounded. — Deep shady woods, Florida, and northward. August. — Scape 1° high. Leaves 2′ long. Spike 2′ – 4′ long.

2. **G. repens,** R. Brown. Low; scape slender, pubescent; radical leaves ovate or oblong-ovate, reticulated; spike slender, loosely few-flowered, 1-sided or somewhat spiral; bracts linear-lanceolate; lip sac-like, ending in an oblong point; stigma 2-toothed. — Shady woods, on the mountains of North Carolina, and northward. August. — Scape 5′ — 8′ high. Leaves 1′ long.

* * *Stem leafy: lip spurred: column inconspicuous: anther ovate, beaked.*

3. **G. quercicola,** Lindl. Stem ascending; leaves thin, ovate or oblong-ovate, acute, on slender petioles, which are dilated, membranaceous, and sheathing at the base; spike short, oblong, densely flowered; bracts scarious, oblong-ovate, mostly shorter than the flowers; sepals and petals oblong, obtuse; lip concave, ending in a broadly-ovate acuminate and recurved point; spur pouch-like, shorter than the ovary; stigma 2-lobed. — Low shady woods, Florida, and westward. August. — Plant tender, 6′ – 12′ high. Leaves and spike 1′ long.

17. LISTERA, R. Brown.

Sepals and petals alike, spreading or reflexed. Lip longer than the sepals, 2-cleft. Column short. Stigma with a rounded beak. Anther ovate, attached to the dorsal summit of the column. Pollen-masses 2, powdery. — Stems low, from clustered fibres, bearing two opposite sessile leaves, and a loose raceme of small greenish flowers.

1. **L. australis,** Lindl. Leaves ovate or oblong-ovate, closely sessile; raceme smoothish, few – several-flowered; bracts minute; lip linear, 3 – 4 times as long as the sepals, deeply 2-cleft, the divisions filiform; column very short. — Wet shady woods, Florida, and northward. July. — Stem 4′ – 8′ high. Leaves ½′ – 1′ long.

2. **L. convallarioides,** Hook. Leaves broadly cordate or roundish; raceme pubescent, few-flowered; bracts half as long as the pedicels; lip oblong-obovate, 2-lobed at the apex, and 2-toothed at the base, twice as long as the se-

pals; column manifest. — Damp mossy woods, on the mountains of North Carolina. July. — Stem 4′ – 8′ high. Leaves ½′ – 1′ long.

18. PONTHIEVA, R. Brown.

Sepals and petals nearly alike, the two outer sepals spreading, the upper one connivent with the petals. Petals, like the lip, adnate to the middle of the column. Lip posterior, clawed, ovate, concave, spreading. Column 2-lobed, beaked. Anther dorsal, linear, stalked, 4-celled. Pollen-masses 4, linear, powdery. — Low herbs, with clustered roots, chiefly broad radical leaves, and greenish flowers on a pubescent scape.

1. **P. glandulosa,** R. Brown. Leaves many-nerved, oblong, spreading, narrowed into a short petiole; scape slender, many-flowered; bracts lanceolate; lateral sepals flat. (Cranichis multiflora, *Nutt.* Ophrys pubera, *Michx.*) — Low shady woods, Florida to North Carolina. Sept. and Oct. — Scape 1° – 1½° high.

19. CYPRIPEDIUM, L. Lady's Slipper.

Sepals 3, the two lower ones mostly united into one under the lip, spreading. Petals narrower. Lip large, inflated, and sac-like. Column short, 3-lobed, the two lateral lobes each bearing a 2-celled anther on the under side, the middle one (sterile stamen) petal-like. Pollen granular. Stigma thick, triangular. — Root fibrous. Leaves large, plaited, sheathing. Flowers large, mostly solitary, leafy-bracted, nodding.

* *Stem leafy: sepals and petals longer than the yellow lip, the latter linear and twisted.*

1. **C. pubescens,** Willd. Pubescent; stem sheathed at the base; leaves 4 – 6, ovate-oblong, acute or acuminate; flowers 1 – 3; sepals greenish, striped with deeper lines, lanceolate, acuminate, the lower sometimes 2-cleft at the apex; petals linear, spirally twisted; lip large (1′ – 1½′ long), laterally flattened, spotted within; stigma triangular, obtuse. — Rich woods in the upper districts, and northward. May and June. — Stem 1° – 1½° high. Leaves 4′ – 6′ long. Flowers inodorous.

2. **C. parviflorum,** Salisb. Very near the preceding, but every way smaller; lip half as large, depressed above; stigma triangular, acute; flowers fragrant. — Rich woods in the upper districts. May and June.

* * *Stem leafy: sepals and petals white, flat, obtuse, not longer than the lip.*

3. **C. spectabile,** Swartz. Pubescent; leaves 6 – 7, oval, acute; sepals oval or oblong, rather longer than the lanceolate petals; lip (1½′ long) much inflated, white tinged with purple, about as long as the sepals. — Mountains of North Carolina, and northward. May and June. — Stem 2° high, commonly 2-flowered. Leaves 4′ – 6′ long. Flowers very showy.

* * * *Scape naked, 1-flowered, 2-leaved at the base.*

4. **C. acaule,** Ait. Pubescent; leaves oblong, obtuse; sepals greenish, oblong-lanceolate, acute, nearly as long as the linear petals, much shorter than the large (2′ long) obovate purple and veiny lip. — Dry woods in the upper districts, and northward. May and June. — Scape 8′ – 12′ high. Leaves ½° long.

ORDER 143. CANNACEÆ. (CANNA FAMILY.)

Perennial herbs, destitute of aroma, with alternate sheathing leaves, the very numerous nerves parallel, and diverging from the strong midrib, and superior irregular monandrous flowers. Sepals 3. Corolla 6-parted; the three exterior divisions alike; the three interior ones very unequal, and often variously imperfect. Stamen and stigma mostly petal-like. Anther 1-celled. Ovary 1 – 3-celled, with 1 – many anatropous or campylotropous ovules. Embryo straight or hooked, in hard albumen. — Rhizoma often tuberous, and abounding in starch.

1. THALIA, L.

Calyx minute. Corolla tubular; the three exterior divisions similar and equal; the interior unequal; the anterior one broad and hooded, the interior lateral one elongated and clawed, the exterior lateral one furnished with two bristles on one side, and partly adnate to the slender stamen on the other. Style thick, spiral: stigma perforated, 2-lipped, the lower lip long and pendent. Capsule utricular, 1-celled, 1-seeded. Seed ovoid, erect, campylotropous. Embryo hooked, in hard albumen. — Stemless herbs from fibrous roots. Scape elongated. Petioles terete, dilated and sheathing at the base. Flowers in bracted panicled spikes, commonly two together, and included in a 2-valved spathe.

1. **T. dealbata,** Roscoe. Plant dusted over with a minute white powder, otherwise smooth; leaves distichous, long-petioled, cordate-ovate, acute; scape terete, reed-like; panicle erect, dense, smooth, the branches not longer than the lanceolate deciduous bracts at their base; spikes erect; valves of the spathe unequal, ovate, coriaceous; flowers small, purple. — Ponds and marshes, South Carolina, and westward. June – Sept. — Scape 3° – 5° high. Leaves 6′ – 9′ long, on petioles 1° – 2° long.

2. **T. divaricata,** n. sp. Plant not powdery; leaves oblong-ovate, acute, rounded at the base, long-petioled; panicle large, divaricate, the branches much longer than the linear deciduous bracts, hairy at the joints; spikes 6 – 10-flowered, zigzag, pendulous; valves of the spathe unequal, oblong, membranaceous, hairy; flowers small, purple; seed ovoid, enclosed in a loose membranaceous pericarp. — Ponds, Apalachicola, Florida. Sept. and Oct. — Scape 5° – 10° high. Leaves 1° – 2° long. Panicle 2° – 4° wide, purplish.

2. CANNA, L. INDIAN-SHOT.

Sepals 3. Corolla 6-parted; the three exterior divisions equal; the interior bilabiate, with the upper lip 2 – 3-parted, or sometimes wanting, the lower entire. Filaments petal-like. Anther marginal. Ovary 3-celled, many-ovuled. Style petal-like. Stigma marginal. Capsule covered with a dense bristly coat, 3-celled, loculicidally 3-valved. Placentæ central. Seeds globose, anatropous. Embryo straight in horny albumen. — Stems leafy. Leaves narrowed into a sheathing petiole. Flowers spiked, showy.

1. **C. flaccida,** Roscoe. Stem stout, very leafy below; leaves ovate-lanceolate, acuminate, narrowed into a long and sheathing petiole; spike few-flowered; sepals green, lanceolate, acute, half as long as the tube of the corolla; corolla funnel-shaped; the exterior divisions similar to the sepals, reflexed; the three interior ones yellow, very thin, oblong-obovate; two of them collateral and adnate below; stamens petal-like, obovate, thickened below, very thin and expanding above, one of them bearing the linear anther on its margin, the other two larger and united into one; style adnate to the tube of the corolla; stigma thick, spatulate, embracing the anther in the bud; capsule oval, 3-angled, few-seeded, membranaceous at maturity, and bursting irregularly at the sides; seeds black, borne on a spongy cord. — Miry swamps, Florida to South Carolina, near the coast. June – Aug. — Stem 2° – 4° high. Leaves 9′ – 15′ long. Corolla 3′ – 4′ long.

ORDER 144. AMARYLLIDACEÆ. (AMARYLLIS FAMILY.)

Chiefly stemless smooth and succulent herbs, with linear leaves, and smooth (not scurfy or woolly) often showy flowers. — Sepals and petals united to form a 6-parted corolla-like perianth, imbricated in the bud, the tube adnate to the 3-celled ovary. Stamens 6: anthers introrse. Ovules anatropous, attached to the central placentæ. Style single. Fruit 1 – 3-celled, valvular or indehiscent. Embryo straight in fleshy albumen, the radicle resting on the umbilicus.

Synopsis.

* Root bulbous.

1. AMARYLLIS. Tube of the perianth short, crownless. Stigmas 3.
2. PANCRATIUM. Tube of the perianth elongated. Stamens connected with a cup-shaped crown. Stigma entire.
3. CRINUM. Tube of the perianth elongated, crownless. Stigma entire.

* * Root tuberous.

4. AGAVE. Capsule 3-valved. Flowers spiked. Leaves thick and fleshy.
5. HYPOXYS. Capsule circumscissile. Flowers umbelled. Leaves grass-like.

1. AMARYLLIS, L.

Perianth corolla-like, bell-shaped or funnel-shaped, 6-parted, spreading above, naked at the throat, the tube short or wanting. Stamens free: anthers versatile. Style elongated, declining: stigma 3-cleft. Capsule 3-valved, many-seeded. Seeds black, compressed or angled. — Scape erect from a coated bulb, ending in a 1 – 2-leaved or many-flowered spathe.

1. **A. Atamasco,** L. (ATAMASCO LILY.) Scape terete, somewhat lateral, 1-flowered; leaves linear, concave, fleshy; spathe 1-leaved, 2-cleft; perianth short-stalked, bell-shaped, white tinged with purple; style longer than the stamens; seeds angled. — Rich damp soil, Florida, and northward. March and April. — Scape 6′ – 12′ high, commonly shorter than the glossy leaves. Flower 2′ – 3′ long.

2. PANCRATIUM, L.

Perianth corolla-like, 6-parted; the narrow divisions spreading; the tube slender and elongated. Stamens united below with a cup-shaped or funnel-shaped variously toothed crown, exserted: anthers versatile, linear. Style elongated, declining: stigma entire. Capsule membranaceous, 3-celled. Seeds often bulb-like. — Scape from a coated bulb, compressed or 2-edged, bearing the large and fragrant leafy-bracted flowers in a cluster at the apex. Leaves strap-shaped.

§ 1. PANCRATIUM. *Tube of the perianth dilated and funnel-shaped at the apex: crown almost wholly adnate to the tube, the border divided into six 2-cleft teeth, alternating with the stamens: capsule many-seeded, loculicidally 3-valved.*

1. **P. maritimum,** L. Leaves glaucous, erect, longer than the slightly compressed many-flowered scape; divisions of the perianth linear-lanceolate, shorter than the slender (3′–4′) tube, greenish without; stamens short. (P. Carolinianum, *L.*) — Salt marshes, South Florida to South Carolina. July–Sept. — Scape 1°–1½° high.

§ 2. HYMENOCALLIS. *Tube of the perianth straight, not dilated at the apex: crown free, funnel-shaped or saucer-shaped, the border irregularly toothed: capsule* 1–3-*seeded, bursting at the sides.*

2. **P. rotatum,** Ker. Bulb bearing runners; leaves flat above, concave toward the base; scape 2-edged, 2–6-flowered, glaucous; divisions of the perianth white, linear, spreading or recurved, longer than the green tube; crown saucer-shaped or somewhat funnel-shaped, with the border irregularly toothed. (P. Mexicanum *of authors.*) — Low banks and swamps, Florida to North Carolina. April and May. — Scape and leaves 1°–2° high.

3. **P. coronarium,** Leconte. Bulb without runners; leaves linear-strap-shaped, flat above, half-cylindrical near the base; scape solitary, green, 2-edged, 4-flowered; divisions of the perianth linear, spreading, white; crown large, funnel-shaped, with six truncate lobes at the stamens, and several fine teeth at the sinuses. — Rocky islets in the Savannah River at Augusta, and in the Congaree at Columbia, *Leconte.* — Scape and leaves 2° long.

4. **P. occidentale,** Leconte. Bulb without runners; leaves linear-strap-shaped, obtuse, concave, and, like the 2-edged 6-flowered scape, glaucous; divisions of the perianth white, linear, spreading and recurved at the apex; crown funnel-shaped, with six toothed lobes alternating with the filaments; capsule many-seeded. — Upland meadows, in the western districts of Georgia, *Leconte.* — Stem and leaves 2° long.

§ 3. ISMENE. *Tube of the perianth curved, dilated at the throat: crown nearly free, somewhat* 12-*toothed: capsule few-seeded.*

5. **P. nutans,** Gwal. Leaves long, strap-shaped, sheathing; scape 3–4-flowered, solitary, 2-edged; flowers nodding; divisions of the perianth lanceolate-linear, white, longer than the green tube; stamens incurved, scarcely longer than the crown. — South Carolina, *Herbert.* — Leaves 2° long.

3. CRINUM, L.

Tube of the perianth crownless at the apex. Otherwise like Pancratium both in character and habit.

1. **C. Americanum,** L. Leaves strap-shaped, concave, obtuse, remotely denticulate, spreading; scape compressed, with rounded edges, 2 – 4-flowered; bracts lanceolate recurved; ovaries sessile, with a linear bractlet at the base of each; flowers large, fragrant; leaves of the perianth white, lanceolate, shorter than the green tube; filaments and style purple above; stigma truncate, entire; ovules 3 in each cell, erect; capsule globose, membranaceous, indehiscent; 1 – 6-seeded, pointed with the long persistent tube of the perianth; seed large, corm-like; embryo oblong, in the axis of copious fleshy albumen; radicle inferior. — River-swamps, Florida, and westward. May – Sept. Scape 1° – 2° high. Perianth 6′ – 8′ long.

4. AGAVE, L.

Perianth corolla-like, funnel-shaped, 6-parted, persistent. Stamens exserted: anthers linear, versatile. Style filiform, exserted: stigma 3-angled or 3-lobed. Capsule coriaceous, 3-lobed, 3-celled, loculicidally 3-valved, many-seeded. Seeds flat, black and shining, attached to the central placentæ. — Scape bracted. Leaves fleshy, spiny or cartilaginous on the margins. Flowers in simple or panicled spikes, bracted.

1. **A. Virginica,** L. Leaves lanceolate, thick and rigid, spine-pointed, denticulate on the margins; scape simple, smooth; flowers small, yellowish, scattered in a simple spike; perianth strongly nerved; filaments and style spotted. — Sterile soil, Florida, and northward. July. — Scape 3° – 5° high. Leaves 6′ – 12′ long. Capsule globose, 3-lobed.

5. HYPOXYS, L. Star-grass.

Perianth 6-parted, persistent, the spreading divisions colored within. Stamens short, unequal: anthers erect. Ovary 3-celled, with the numerous amphitropous ovules attached to the central placentæ in two rows. Style short and thick: stigmas 3. Capsule top-shaped, many-seeded, opening transversely near the summit, the upper portion, with the withered perianth, falling off like a lid. Seeds globular, with a beak-like projection near the base. Radicle inferior. — Low pubescent herbs, from a tuberous root, with grass-like leaves, and a naked scape, bearing the few yellow flowers in a terminal bracted umbel.

1. **H. erecta,** L. Hairy; leaves linear, channelled; scapes 1 – 4, filiform, 2 – 4-flowered; bracts subulate, much shorter than the slender unequal pedicels; divisions of the perianth oblong, greenish and hairy without, yellow within; capsule 8-celled. — Varies, with the more rigid leaves nearly smooth, the 2 – 3-flowered scape flattened, and the bristle-like bracts longer than the nearly sessile almost woolly perianth. — Low ground, Florida, and northward. March and April. — Scapes 2′ – 9′ long. Leaves at length much longer than the scape. Flowers 8″ wide.

2. **H. juncea,** Smith. Sparingly hairy; leaves filiform; scapes 1 – 3, filiform, 1 – 2-flowered; bracts bristle-like, shorter than the villous pedicels; divisions of the perianth oblong, the three exterior ones greenish and hairy without; partitions of the capsule vanishing at maturity; seeds black, minutely pitted. (H. filifolia, *Ell.*) — Low pine barrens, Florida and the lower districts of Georgia, and westward. March and April. — Scape 4′ – 9′ long, at length procumbent. Flowers 9″ – 12″ wide.

Order 145. HÆMODORACEÆ. (Bloodwort Family.)

Perennial fibrous-rooted herbs, with leafy or scape-like stems, mostly equitant and sword-shaped leaves, and regular woolly or scurfy flowers. — Perianth tubular, 6-cleft, more or less cohering with the 3-celled ovary. Stamens 3 or 6: anthers adnate, introrse, 2-celled. Ovules mostly few, anatropous or amphitropous, attached to the central placentæ. Styles 3, united, deciduous, or persistent and separating: stigma entire. Capsule enclosed in the persistent perianth, loculicidally 3-valved at the apex. Embryo small, in hard albumen.

Synopsis.

1. LACHNANTHES. Perianth woolly: stamens 3: style deciduous: flowers cymose: stem leafy.
2. LOPHIOLA. Perianth woolly: stamens 6: style persistent: flowers corymbose: stem leafy.
3. ALETRIS. Perianth scurfy: stamens 6: style persistent: flowers spiked: stem scape-like.

1. LACHNANTHES, Ell.

Perianth woolly without, 6-lobed; with the exterior lobes smaller; the tube adnate to the ovary. Stamens 3, slender, exserted, opposite the exterior lobes of the perianth: anthers linear. Style filiform, declined, deciduous: stigma entire. Capsule globose, 3-angled. Seeds amphitropous, few, thin, orbicular, concave, fixed by the middle to the thick globose placentæ. — A leafy-stemmed plant, with orange-colored juice.

1. **L. tinctoria,** Ell. Root red, fibrous; stem mostly simple, villous above; leaves linear-sword-shaped, smooth, the lower ones crowded and equitant, the others smaller and remote; flowers 2-ranked, crowded in lateral and terminal compound woolly cymes, yellow within; exterior lobes of the perianth linear; valves of the capsule separating from the placentæ; seeds black. — Ponds and ditches, Florida, and northward. July – Sept. — Stem 2° – 3° high. Leaves 1° – 1½° long. Flowers ½′ long. Bracts linear.

2. LOPHIOLA, Ker.

Perianth woolly without, and at the throat within, nearly equally 6-lobed, spreading; the tube adnate to the lower half of the ovary. Stamens 6, slender:

anthers oblong. Style subulate, erect, persistent and separable: stigma entire. Capsule ovate, coriaceous, 3-ribbed and 3-furrowed. Seeds anatropous, few, linear-oblong, curved, fixed at the base.

1. **L. aurea,** Ker. Stem erect, finely pubescent above, mostly simple; lowest leaves linear-sword-shaped, acute, equitant, the others diminishing upward, remote; flowers small, yellow within, in close or open corymbose woolly racemes. (Conostylis Americana, *Pursh.*) — Wet pine barrens, Florida, and northward. July. — Stem 2° high, creeping at the base. Leaves 4′ – 12′ long. Flowers 3″ long, nodding in the bud.

3. ALETRIS, L. Star-grass.

Perianth tubular, scurfy and viscid without, smooth within, 6-cleft, the tube adnate to the base of the ovary. Stamens 6, very short, included: anthers sagittate. Style subulate, erect, persistent, and separable: stigmas 3. Capsule ovate, coriaceous. Seeds ovate, ribbed, fixed at the base. — Perennial herbs, with slender scape-like linear-bracted stems, bearing at the base a cluster of flat spreading leaves, and at the summit numerous small white or yellow flowers in a spiked raceme.

1. **A. farinosa,** L. Leaves lanceolate, very acute, sessile; spike short (3′ – 12′), rigid; flowers approximate or crowded; perianth white or yellow, nearly sessile, cylindrical, with narrow and spreading lobes; style slender, subulate, 3-cleft; capsule ovate-lanceolate, longer than the perianth. — Pine-barren swamps, Florida to North Carolina. May and June. — Scape 2° – 3° high. Leaves 3′ – 6′ long. Perianth 4″ long.

2. **A. aurea,** Walt. Leaves ovate-lanceolate, very acute, narrowed at the base; raceme elongated (1° – 2°), slender; flowers scattered; perianth white or yellow, short-stalked, globose-ovate, with broad and connivent lobes; style short, somewhat conical, obscurely 3-cleft; capsule ovate, as long as the perianth. — Low sandy soil, Florida to North Carolina. May and June. — Scape 2° – 3° high. Leaves 2′ – 4′ long. Perianth 2″ – 3″ long.

Order 146. BROMELIACEÆ. (Pine-Apple Family.)

Chiefly scurfy epiphytes, with fibrous roots, rigid leaves, and regular conspicuously bracted mostly spiked flowers. — Perianth free, or more or less adnate to the 3-celled ovary, 6-parted, imbricated, the three outer divisions calyx-like. Stamens 6: anthers 2-celled, introrse. Ovules numerous, anatropous, erect or pendulous. Placentæ central. Style single: stigmas 3. Fruit berry-like, or 3-celled, 3-valved capsule. Seeds stalked. Embryo small, at the base of copious mealy albumen.

1. TILLANDSIA, L. Long Moss. Air-Plant.

Sepals rigid. Petals imbricated and tube-like below, spreading above. Stamens filiform, hypogynous. Ovary free. Style slender. Capsule linear or

linear-oblong, cartilaginous, septicidally 3-valved, each valve separating into 2 plates. Seeds erect, club-shaped, pointed, raised on a long and hairy stalk. — Radical leaves mostly crowded, imbricated. Petals fugacious.

** Stem rigid, erect: flowers spiked, blue.*

+ Leaves broad at the base, gradually narrowed upward.

1. **T. utriculata,** Leconte. Leaves scurfy and glaucous, subulate and recurved at the summit, very much dilated, concave and imbricated at the base, shorter than the rigid mostly branching stem; the uppermost small and sheathing; flowers scattered; sepals oblong-linear, obtuse, longer than the oblong pubescent membranaceous bracts, much shorter than the capsule; petals pale blue, twice as long as the sepals, slightly spreading at the apex; stamens exserted. — South Florida. June and July. — Stem 2° – 3° high. The dilated and imbricated bases of the leaves form a kind of cup which commonly contains a considerable quantity of water.

2. **T. bracteata,** n. sp. Leaves scurfy, concave, gradually narrowed upward, subulate and erect at the apex, the uppermost reduced to ovate pointed bracts; stem branched, longer than the leaves; spikes compressed, 2-edged; bracts ovate, coriaceous, smooth, closely imbricated in two rows, keeled on the back, longer than the linear acute keeled sepals. — South Florida. — Stem 2° high. Leaves 1° – 1½° long.

3. **T. bulbosa,** Hook. Small, very scurfy; leaves broad and clasping at the base, concave, imbricated, nearly equal, spreading above, shorter than the spike; spike simple, few-flowered; bracts oblong, scurfy, imbricated in two rows, longer than the sepals, and half as long as the capsule. — South Florida. — Stem stout, 4′ high. Spike 3′ – 4′ long, 6 – 7-flowered. Leaves 3′ – 4′ long. Corolla purplish blue.

+ + Leaves linear or filiform, from an abruptly dilated base.

4. **T. juncea,** Leconte. Stem slender, leafy; leaves scurfy, linear, concave, recurved, longer than the stem, the lowest ones imbricated, the upper sheathing; spikes branched, few-flowered; bracts imbricated, smoothish, acute, longer than the sepals; petals deep blue, three times as long as the sepals, recurved at the apex. — South Florida. — Stem 1° high. Spikes 2′ – 4′ long. Leaves 1° – 1½° long.

5. **T. Bartramii,** Ell. Stem slender, leafy; leaves smooth, erect, filiform, straight and rigid, as long as the stem, the upper ones short and sheathing; spike branched, few-flowered; bracts scurfy, imbricated, longer than the sepals, nearly as long as the capsule, the lower ones awned; petals blue, spreading at the apex. — Southern districts of Georgia, *Elliott,* to South Florida. — Stem 1° high. Spikes 3′ – 4′ long. Leaves bristle-like at the summit.

6. **T. cæspitosa,** Leconte. Stems low, clustered; leaves reddish, longer than the stem, scurfy, bristle-awl-shaped, erect, semi-terete, concave at the base, the upper ones scale-like; spike 3 – 4-flowered; bracts imbricated; petals blue, longer than the bracts, recurved at the apex. (T. pinifolia, *Leconte?*) — East Florida, *Leconte.* — Plant reddish, 4′ – 5′ high, growing in large roundish clusters on the trunks of trees.

7. **T. recurvata,** Pursh. Leaves scurfy, bristle-awl-shaped, curved, nearly terete, shorter than the stem; stem naked above, 1 – 2-flowered; corolla longer than the calyx. — East Florida, *Leconte.* — Stem 6′ high. Leaves ash-color, 2-ranked, narrowly channelled.

* * *Stems filiform, pendent: flowers solitary, green.*

8. **T. usneoides,** L. (Long Moss.) Scurfy and hoary; stems (1° – 2° long) branching; leaves 2-ranked, linear-awl-shaped, recurved; flowers sessile at the summit of the branches, small; sepals longer than the bracts, half as long as the linear recurved green petals. — Humid situations in the lower districts, Florida to North Carolina, and westward. June – Sept.

Order 147. IRIDACEÆ. (Iris Family.)

Herbs, with linear or sword-shaped equitant nerved leaves, and fugacious often showy flowers from a 2-leaved spathe. — Perianth 6-parted, the divisions spreading and equal, or the inner ones smaller, convolute in the bud. Stamens 3, distinct or united: anthers extrorse. Ovary adnate to the tube of the perianth, 3-celled; the numerous anatropous ovules fixed to the central placentæ. Style single: stigmas 3. Capsule loculicidally 3-valved. Embryo in the axis of fleshy albumen.

Synopsis.

1. IRIS. Stigmas petal-like, covering the stamens: capsule angular.
2. SISYRINCHIUM. Stigmas filiform: capsule globular: stem flat.
3. NEMASTYLIS. Stigmas filiform, 2-parted: stem terete.

1. IRIS, L. Blue Flag. Flower-de-Luce.

Perianth corolla-like, 6-parted, the exterior divisions recurved, and often crested or bearded within, the interior mostly smaller and erect. Stamens 3, opposite the outer divisions of the perianth, concealed by the dilated petal-like 2-lipped spreading stigmas. Style 3-angled. Capsule 3 – 6-angled. Seed numerous, flattened, packed in 2 rows in the cells. — Perennial herbs, with creeping or tuberous rootstocks, simple or branched stems, linear or sword-shaped leaves, and showy flowers from a scarious spathe.

* *Stems tall, leafy: divisions of the perianth unequal.*

1. **I. versicolor,** L. Stem nearly terete, simple or branched; leaves sword-shaped; flowers terminal, single or spiked, crestless; perianth pale blue, variegated with white, yellow, and purple, the inflated tube shorter than the obtusely 3-angled ovary; stigmas 2-toothed at the base, with the lips entire, or slightly crenate; capsule oblong, obtusely 3-angled. — Wet places, Florida, and northward. April and May. — Stem 1½° – 2° high. Lowest leaves 1½° – 2° long, 1′ – 1½′ wide. Perianth 2′ long.

2. **I. hexagona,** Walt. Stem terete, simple; leaves linear-sword-shaped; flowers axillary and terminal, solitary, crested; perianth deep blue, variegated with white, yellow, and purple; the cylindrical angular tube longer than the

6-angled ovary; stigmas much longer than the anthers, nearly as long as the interior perianth, the large lips cut-toothed; capsule oblong-cylindrical, 6-angled. — Swamps, Florida to South Carolina, near the coast. April. — Stem 2° – 3° high. Lowest leaves 2° – 3° long. Flowers 4′ long.

3. **I. cuprea,** Pursh. Stem simple, furrowed and 1-angled below; leaves linear-sword-shaped; flowers axillary and terminal, single or by pairs, crestless, dull yellow; tube of the perianth somewhat inflated, as long as the 6-angled ovary; stigmas scarcely longer than the anthers, about half as long as the petals, the lips nearly entire; capsule tumid, 6-angled. — Swamps in the lower districts of Georgia, *Elliott,* and westward. April and May. — Stem 3° high. Leaves 2° long. Flowers 2′ long.

4. **I. tripetala,** Walt. Stem terete, simple, or with peduncle-like branches; leaves rather short, sword-shaped, glaucous; flowers terminal, solitary, crestless, blue, variegated with yellow and purple; inner divisions of the perianth very short, wedge-shaped, abruptly pointed; stigmas 2-toothed at the base, and with toothed lips; ovary 3-angled, longer than the short terete tube of the perianth; capsule oval, 3-angled. — Pine-barren swamps, Florida to North Carolina. June and July. — Stem 1° – 2° high. Leaves 1° long. Flowers 2′ – 3′ long, sometimes by pairs. Limb of the sepals roundish.

5. **I. Virginica,** L. Stem slender, simple; leaves elongated, grass-like; flowers 2 – 6, terminal, on a long and slender peduncle, crestless, blue and white; ovary 3-angled, 2-furrowed on the sides, much longer than the very short tube of the perianth; capsule 3-angled, acute at each end. — Swamps, North Carolina, Tennessee, and northward. June. — Stem and lower leaves 2° long. Flowers 1½′ long.

* * *Stems low, with sheath-like leaves: divisions of the perianth nearly equal.*

6. **I. verna,** L. Stem very short, concealed by the short spathe-like leaves, 1-flowered; proper leaves linear-sword-shaped, glaucous; perianth pale blue, crestless, the divisions about as long as the filiform partly concealed tube; capsule 3-angled. — Pine barrens of the middle districts, mostly in dry soil, Alabama to North Carolina. April. — Leaves 5′ – 8′ long. Limb of the perianth 1′ long.

7. **I. cristata,** Ait. Stem 1 – 3-flowered; leaves lanceolate (3′ – 5′ long); outer divisions of the perianth crested, much shorter than the filiform tube; capsule acutely 3-angled; otherwise like the preceding. — Mountains of North Carolina. May.

2. SISYRINCHIUM, L. Blue-eyed Grass.

Perianth corolla-like, 6-parted, the divisions nearly equal, spreading. Stamens 3, monadelphous: anthers sagittate. Style short: stigmas 3, simple, filiform and involute. Capsule and seeds roundish. — Grass-like herbs, with fibrous roots, and scape-like 2-edged stems. Flowers small, in an umbellate cluster, successively developed from a rigid 2-leaved spathe.

1. **S. Bermudiana,** L. Leaves linear, erect; stem simple or sparingly branched, naked or 1 – 2-leaved, more or less broadly 2-winged; leaves of the spathe equal and shorter than the flowers, or the lower one much longer than the flowers; perianth blue, yellow in the centre; the divisions notched and bristle-awned at the apex. (S. mucronatum, *Michx.*) — Grassy meadows, or sometimes in dry soil, Florida, and northward. July and Aug. — Stem 6′ – 18′ high. Leaves mostly shorter than the stem. Flowers 4 – 6 in a spathe, ½′ wide, opening in the evening.

3. NEMASTYLIS, Nutt.

Perianth 6-parted, the divisions nearly equal and spreading. Stamens 3, distinct, with the subulate filaments much shorter than the elongated linear anthers. Style short, 3-lobed, with the lobes 2-parted, each division produced into filiform radiating stigmas. Capsule oblong, truncated. — Herbs with coated bulbous roots, linear plicate leaves, and very fugacious flowers from a 2-leaved spathe.

1. **N. cœlestina,** Nutt. Bulb small, roundish; radical leaves few, elongated, sheathing; those of the stem diminishing upward, the uppermost bract-like; flowers mostly solitary, terminal; divisions of the perianth oblong-obovate; capsule obtusely 3-angled; seeds angular, brown. (Ixia cœlestina, *Bartram.*) — Pine barrens, Florida to South Carolina, and westward. May and June. — Stem 1½° – 2° high. Flowers bright blue.

ORDER 148. DIOSCOREACEÆ. (YAM FAMILY.)

Twining herbs, with tuberous roots, ribbed and reticulated leaves, and small regular diœcious flowers, in axillary spikes or panicles. — Perianth 6-parted, the tube (in the fertile flower) adherent to the 3-celled ovary. Stamens 6: anthers 2-celled, introrse. Ovules anatropous, 1 – 2 in each cell. Styles 3, more or less united below. Fruit mostly capsular, 3 – 6-seeded. Embryo minute, in hard albumen.

1. DIOSCOREA, Plum. YAM.

Tube of the perianth 3-winged. Stamens inserted at the base of the limb. Capsule 6-seeded, membranaceous, 3 winged, opening septicidally through the wings. Seeds flat, broadly winged. — Leaves petioled, mostly cordate and entire. Petioles tumid at the base.

1. **D. villosa,** L. Stem smooth (10° – 15° long); leaves alternate, opposite, or whorled, broadly cordate, acuminate, 7 – 9-nerved, smooth, or pubescent beneath, mostly longer than the slender petiole; flowers very small, whitish; the sterile ones in scattered clusters on the very slender branches of the axillary panicles; the fertile in a simple spike; stigmas notched at the apex; capsule oval or obovate, strongly 3-winged, nodding. (D. quaternata, *Walt.*) — Margins of swamps, Florida, and northward. July.

ORDER 149. SMILACEÆ. (SMILAX FAMILY.)

Herbs or climbing shrubs, not essentially distinct from the Lily Family, but with ribbed and veiny reticulated leaves, and separate styles or stigmas. — Leaves not sheathing, often bearing tendrils. Fruit baccate.

SUBORDER I. EUSMILACEÆ. (SMILAX FAMILY.) Flowers diœcious, in axillary and umbel-like clusters. Anthers 1-celled. Stigmas 1 – 3, sessile or nearly so. Ovules 1 – 2 in each cell of the ovary, orthotropous, suspended. — Tendril-bearing vines. Flowers small. Leaves alternate.

1. SMILAX. Cells of the ovary 1-ovuled. Woody vines.
2. COPROSMANTHUS. Cells of the ovary 2-ovuled. Climbing herbs.

SUBORDER II. TRILLIACEÆ. (TRILLIUM FAMILY.) Flowers perfect, terminal. Anthers 2-celled. Styles or stigmas 3. Ovules several in each cell of the ovary, anatropous, horizontal. — Erect herbs. Leaves whorled.

3. TRILLIUM. Exterior leaves of the perianth calyx-like, persistent. Stem 1-flowered. Leaves 3 in a whorl, terminal.
4. MEDEOLA. Leaves of the perianth alike, deciduous. Stem few-flowered. Leaves 3 – 7 in a whorl, lateral and terminal.

1. SMILAX, Tourn. CHINA BRIER.

Flowers diœcious. Perianth bell-shaped, 6-leaved, the leaves nearly equal and alike, deciduous. Stamens 6, inserted on the base of the perianth: anthers erect, 1-celled. Ovary free from the perianth, 1 – 3-celled, with a single orthotropous pendulous ovule in each cell. Stigmas 1 – 3 (mostly 3), sessile or nearly so, slender, spreading, or recurved. Berry 1 – 3-celled, 1 – 3-seeded. Seeds globular or angled. Embryo minute, in horny albumen. — Woody and commonly thorny or prickly vines, climbing by means of a pair of tendrils attached to the petioles. Leaves alternate, ribbed, and reticulate-veined, mostly smooth and shining. Flowers small, greenish, in stalked axillary clusters.

* *Peduncles longer than the petioles or pedicels.*

†– *Peduncles flattened: berry black.*

1. **S. tamnoides,** L. Stem scurfy when young, armed with stout subulate prickles; branches mostly unarmed, compressed – 4-angled; leaves deltoid-ovate, or hastate – 3-lobed, truncate or slightly cordate, rarely acute at the base, 5 – 7-ribbed, often discolored; the margins, ribs, and petiole smooth, or fringed with fine prickles; peduncles about twice as long as the petioles; stigmas 1 – 3, mostly solitary; berry commonly 1-seeded. (S. Bona-Nox, hastata, hederæfolia, &c. *of authors.*) — Swamps and thickets, Florida, and northward. May.

2. **S. Pseudo-China,** L. Lower part of the stem beset with numerous black needle-shaped prickles; branches unarmed, slightly angled; leaves ovate or round-ovate, often contracted in the middle, rounded or cordate at the base,

abruptly pointed, more or less bristly-ciliate on the margins, 5-nerved; peduncles three times as long as the petioles, many-flowered; stigmas 3; berry 3-seeded. (S. panduratus, *Pursh.*) — Woods and thickets, Florida, and northward. April and May.

3. **S. glauca,** Walt. Stem armed with few and scattered prickles, very slender; branches terete, unarmed; leaves ovate or oval, entire, obtuse, mucronate, rounded or slightly cordate at the base, white beneath, 3 – 5-ribbed, the margins entire; peduncles very slender, 2 – 3 times as long as the petiole, few-flowered; stigmas 3; berry 3-seeded, glaucous. (S. caduca, *Willd.*) — Shady margins of swamps, Florida, and northward. May. — Leaves 2′ – 4′ long.

+ + Peduncles terete: berry whitish.

4. **S. pumila,** Walt. Softly pubescent; stem low (1° – 3° high), terete, unarmed; leaves ovate or oblong, cordate, mucronate, persistent, mostly discolored and at length smooth above, pale beneath, 5-ribbed; peduncles about twice as long as the petioles, rigid, dense-flowered; stigma single; berry ovoid, whitish, 1-seeded. (S. pubera, *Michx.*) — Dry sandy soil, Florida to South Carolina, in the lower districts. October. — Rootstock creeping. Leaves 2′ – 4′ long.

** * Peduncles not longer than the petioles.*

+ Berries red.

5. **S. Walteri,** Pursh. Stem low, armed with a few scattered prickles near the base, otherwise unarmed; branches obscurely 4-angled; leaves deciduous, membranaceous, varying from oblong-lanceolate to oval, mucronate, acute, rounded or rarely slightly cordate at the base, 5-ribbed; peduncles flattened, as long as the petioles and pedicels; perianth rather large (3″ long), brownish; stigmas 3; berry (acuminate, *Walt.*) globular, 3-seeded. (S. caduca, *Ell.*) — Pine-barren ponds and swamps, Florida to North Carolina. March and April. — Rhizoma creeping. Stem seldom more than 6° long. Leaves 2′ – 4′ long.

6. **S. lanceolata,** L. Stem tall, mostly unarmed; branches terete; leaves evergreen, rather thin, varying from lanceolate to oblong-ovate, acute at each end, 5-ribbed, paler beneath; peduncle terete, as long as the petiole, many-flowered; stigmas 3; berry globular, 3-seeded. — Rich woods and margins of swamps, Florida to North Carolina. August. — Stem sometimes 20° – 30° long. Rootstock tuberous. Leaves 3′ – 4′ long.

+ + Berries black.

7. **S. laurifolia,** L. Stem stout, armed with strong prickles; branchlets 1-angled, unarmed; leaves evergreen, coriaceous, varying from ovate to lanceolate, obtuse, mucronate, 3-nerved; peduncles shorter than the pedicels; stigma solitary; berry globular, 1-seeded. (S. alba, *Ph.* ?) — Swamps and margins of ponds, Florida to North Carolina. July and Aug. — Stem climbing high. Leaves 3′ – 5′ long. Berries maturing in the fall of the succeeding year, very abundant.

8. **S. auriculata,** Walt. Stem commonly low and straggling, slender, armed with short prickles; branches flexuous, 4-angled; leaves evergreen, rigid, small, strongly 3-ribbed, varying from lanceolate to ovate, entire or hastate – 3-lobed, acute at each end; peduncles shorter than the pedicels, many-flowered; stigmas

2–3; berry small, globular 2–3-seeded. (S. ovata, *Pursh? Ell.*) — Dry sand-ridges along the coast, Florida to North Carolina. May and June. — Stem trailing, or covering small bushes. Leaves 1′–2′ long, strongly reticulated. Flowers small, very fragrant.

9. **S. rotundifolia,** L. Stem climbing high, armed with scattered prickles; branchlets 4-angled; leaves thin, ovate or round-ovate, entire, abruptly pointed, mostly rounded or slightly cordate at the base; peduncles few-flowered, rather longer than the pedicels, flattened; berry globular, 3-seeded, blue-black. (S. caduca, *L.* S. quadrangularis, *Muhl.*) — Swamps in the middle and upper districts, and northward. June. — Plant yellowish green. Leaves 2′–4′ long.

2. COPROSMANTHUS, Torr.

Cells of the ovary 2-ovuled. — Stems herbaceous, unarmed. Peduncles and petioles elongated. Berry blue-black. Otherwise like Smilax.

1. **C. herbaceus,** Kunth. Stem erect (1°–3° high), mostly simple, leafy above; leaves few, oblong or oval, mucronate, pubescent, 5-nerved, the upper ones whorled, the lower bract-like; peduncles few (3′–4′ long), below the leaves; berry 2–3-seeded. (Smilax herbacea, *L.*) — Dry fertile soil, Florida to North Carolina. June. — Flowers fetid.

2. **C. peduncularis,** Kunth. Stems curving or climbing (3°–5° long), branched, leafy; leaves alternate, round-cordate, acuminate, smooth; peduncles numerous, axillary (4′–6′ long); berry 6-seeded. (Smilax peduncularis, *Muhl.*) — Rich soil in the upper districts, and northward. June. — Flowers fetid.

3. **C. tamnifolius,** Kunth. Stems erect or climbing; leaves hastate, cordate, obtuse, mucronate, 5-nerved, smooth, the upper ones narrower; peduncles longer than the petioles; berry 2–3-seeded. (Smilax tamnifolia, *Michx.*) — Pine barrens, South Carolina, and northward. July.

3. TRILLIUM, L.

Flowers perfect. Perianth 6-leaved, the three exterior leaves calyx-like, persistent, the interior withering. Stamens 6, inserted at the base of the perianth. Filaments short: anthers adnate, linear, 2-celled. Ovary 6-ribbed, 3-celled, with numerous anatropous horizontal ovules in each cell. Styles or stigmas 3, slender, stigmatic within, recurved, persistent. Fruit a roundish 6-sided many-seeded purple berry. — Low perennial herbs, with tuberous rootstocks, and simple stems, which are sheathed at the base, and terminated with a whorl of three broad leaves and a single sessile or peduncled showy flower.

** Flower sessile, erect.*

1. **T. sessile,** L. Rootstock horizontal; stems slender, commonly two or more in a cluster; leaves sessile, broadly oval, widest in the middle, abruptly short-pointed, narrowed at the base, 3–5-nerved, variegated above with paler and deeper green; petals dark purple, lanceolate, erect, much longer than the lanceolate spreading sepals. — Rich shady woods, in the upper districts, and

northward. March and April. — Stems 6′ – 12′ high. Leaves 1′ – 3′ long. Petals 10″ – 15″ long.

2. **T. discolor,** Wray? Rootstock tuberous, vertical; stem stout, solitary; leaves sessile, varying from ovate-lanceolate to broadly ovate, tapering from near the base to the apex, 3 – 7-nerved, variegated above with green and brown or dark purple; petals erect, oblong, obtuse, narrowed below, dark purple varying into green, rather longer than the lanceolate, spreading sepals; filaments very short, purple. — Rich woods, in the middle and lower districts, Florida to South Carolina. Feb. and March. — Stem 6′ – 12′ high. Leaves 3′ – 5′ long. Petals 1½′ – 2′ long.

* * *Flower on an erect or declining peduncle.*

3. **T. pusillum,** Michx. Stem slender; leaves sessile, lanceolate or oblong, obtuse, 3-nerved; peduncle erect, shorter than the spreading flower; petals lanceolate, pale flesh-color, acutish, one third longer than the lanceolate obtuse sepals; filaments slender, as long as the anthers; stigmas united below into a slender style, longer than the filaments. — Pine barrens in the low country of Carolina, *Michaux.* North Carolina, *Curtis.* — Stem 6′ – 8′ high. Leaves 1½′ – 2′ long. Flower 8″ – 10″ long.

4. **T. erectum,** L. Stem solitary; leaves sessile, broadly rhomboidal, abruptly acuminate, acute at the base; peduncles longer than the spreading flowers (1½′ – 3′ long), at length declined; petals oval or oblong, obtuse or acutish, dark-purple, rather longer than the lanceolate-ovate acute sepals; filaments shorter than the anthers, or the short and distinct stigmas. (T. rhomboideum, *Michx.*) — Varies with smaller white or yellowish flowers. — Shady woods, on the mountains of North Carolina, and northward. May. — Stem 1° high. Leaves 3′ – 5′ long, and of the same width. Flowers 1′ – 1½′ long, fetid.

5. **T. grandiflorum,** Salisb. Stem solitary; leaves rhombic-ovate, abruptly acuminate, nearly sessile; peduncle longer than the erect-spreading flower, erect or slightly declined; petals obovate, white, much longer and broader than the lanceolate acutish sepals; filaments slender, shorter than the anthers, nearly equalling the short recurved stigmas. — Shady woods on the mountains of Carolina, *Elliott,* and northward. May. — Stem 1° – 1½° high. Leaves 3′ – 5′ long. Petals 2′ long, changing to rose-color.

6. **T. erythrocarpum,** Michx. Stem solitary; leaves ovate, long-acuminate, rounded at the base, short-petioled; peduncle (1′ – 2′ long) erect, longer than the widely-spreading flower; petals oblong, acutish, wavy, much longer than the lanceolate sepals, white, striped with purple at the base; stigmas slender, longer than the anthers; berry red. — Rich shady woods in the upper districts, Georgia, and northward. April and May. — Stem 1° high. Leaves 3′ – 5′ long. Flowers 9″ – 12″ long.

* * * *Flower on a recurved peduncle.*

7. **T. cernuum,** L. Stems 2 – 3 together; leaves broadly rhomboidal, abruptly acuminate, short-petioled; peduncle mostly shorter than the small flower; petals white, oblong-ovate, acute, wavy, recurved, rather longer than

the lanceolate sepals; stigmas short, distinct, exceeding the short erect anthers. — Shady woods in the upper districts, Georgia, and northward. April and May. — Stem 1° - 1½° high. Leaves 2′ - 6′ long, and nearly as broad. Petals 8″ - 12″ long.

8. **T. stylosum,** Nutt. Stem solitary, slender; leaves oval or oblong, acute, short-petioled; peduncle shorter than the large flower; petals rose-color, oblong, obtuse or abruptly pointed, wavy, spreading, much longer and broader than the lanceolate sepals; stigmas slender, united below the middle, much shorter than the long recurved anthers. (T. nervosum, and T. Catesbæi, *Ell.*) — Low shady woods in the upper districts, Georgia to North Carolina. April and May. — Stem 1° - 1½° high. Leaves 4′ long. Petals 1½′ - 2′ long.

4. MEDEOLA, Gronov.

Flowers perfect. Leaves of the perianth 6, similar, deciduous. Stamens 6, erect, hypogynous: anthers linear-oblong, fixed near the base, introrse. Ovary globose, 3-celled, with six anatropous ovules in each cell. Styles 3, slender, recurved, stigmatic within. Berry globose.

1. **M. Virginica,** L. Rhizoma horizontal, tuberous; stem simple, slender, clothed with loose deciduous wool, bracted below, bearing above the middle a whorl of 6 - 8 oblong-lanceolate acute leaves, and at the summit a smaller whorl of 3 - 4 ovate leaves, which surround the 2 - 8 small greenish nodding flowers; styles red. — Shady banks, Middle Florida, and northward. June. — Stem 2° high.

Order 150. ROXBURGHIACEÆ. (Roxburghia Family.)

Herbs or twining shrubs, with petioled parallel-nerved reticulated leaves, and perfect axillary racemose flowers. — Perianth 4-leaved or 4-parted. Stamens 4, hypogynous: anthers 2-celled, introrse. Ovary free, or united with the base of the perianth, 1-celled. Stigma sessile. Ovules few or numerous, anatropous. Placenta parietal. Capsule 2-valved. Seeds fixed to hairy or fibrillous cords, erect or pendulous. Embryo minute or slender, in fleshy albumen.

1. CROOMIA, Torr.

Perianth deeply 4-parted, persistent, the spreading nerveless oval divisions imbricated in the bud. Filaments separate, thick, erect, inserted on the base of the perianth opposite its lobes: anthers short, oblique, with the connective minute or wanting. Ovary globose-ovate, sessile. Stigma 2-lobed. Ovules 4 - 6. Fruit follicular, beak-pointed, at length 2-valved. Seeds 1 - 4, obovate, suspended from the apex of the nerve-like, at length free placenta, nearly covered by the fibres of the cord. Embryo minute, obovate. — A low perennial herb,

from a slender creeping rhizoma. Stem simple, sheathed at the base, leafy at the summit. Leaves 4 – 6, alternate, oblong-cordate, 5 – 9-ribbed. Peduncles few-flowered. Flowers small, greenish, on jointed nodding pedicels, which are thickened upward.

1. **C. pauciflora,** Torr. — Shady woods, Florida, Georgia, and Alabama. April. — Stem 6′ – 12′ high. Leaves 2′ – 4′ long, thin, spreading.

Order 151. LILIACEÆ. (Lily Family.)

Chiefly herbs, with sessile or sheathing parallel-nerved leaves, and perfect flowers. — Perianth corolla-like, 6- (rarely 4-) leaved or lobed, free from the 2 – 3-celled ovary. Stamens 6 (rarely 4), hypogynous or perigynous: anthers introrse (except in No. 9). Styles united. Stigmas 3, distinct or united. Fruit a capsule or berry, few – many-seeded. Seeds anatropous or amphitropous. Embryo small, in fleshy or hard albumen.

Synopsis.

Tribe I. **ASPARAGEÆ.** Fruit a berry. Divisions of the perianth more or less united (except No. 4). — Leaves broad.

1. POLYGONATUM. Flowers axillary. Perianth tubular. Stems leafy.
2. SMILACINA. Flowers in a terminal raceme. Perianth spreading. Stems leafy.
3. CONVALLARIA. Flowers racemed. Perianth 6-lobed. Scape naked.
4. CLINTONIA. Flowers umbelled. Perianth 6-leaved. Scape naked.

Tribe II. **ASPHODELEÆ.** Fruit a capsule. Divisions of the perianth united at the base. — Stems scape-like. Leaves linear, rarely lanceolate.

* Root a coated bulb.

5. ALLIUM. Flowers umbelled, from a scarious spathe. Seeds smooth and black.
6. NOLINA. Flowers racemed, white. Stigmas 3. Seeds roughened, brown.

* * Root a tuberous rhizoma.

7. SCHŒNOLIRION. Flowers racemed, white. Seeds smooth and black. Leaves equitant.

Tribe III. **TULIPACEÆ.** Fruit a capsule. Divisions of the perianth distinct, deciduous. — Stems leafy.

* Bulbous-rooted herbs. Seeds pale.

8. ERYTHRONIUM. Seeds ovoid, with a membranaceous appendage at the apex. Stem 2-leaved.
9. LILIUM. Seed flat, winged, not appendaged. Stem many-leaved.

* * Palm-like arborescent plants. Seeds black.

10. YUCCA. Stigmas 3, nearly sessile. Capsule dry or pulpy. Leaves spiny-pointed.

1. POLYGONATUM, Desf.

Perianth tubular, 6-cleft. Stamens 6, inserted on the middle of the tube, included: anthers sagittate, fixed at the base. Ovary 3-celled, with 3 – 6 ovules in each cell. Style slender: stigma obtuse. Berry few-seeded. — Rhizoma creeping. Stem simple, leafy. Leaves oval or oblong. Peduncles axillary, 1 – few-flowered. Flowers drooping, on bractless pedicels.

1. **P. biflorum,** Ell. Stem terete or furrowed, smooth, curving above; leaves 2-ranked, sessile or slightly clasping, oblong, 3 – 7-nerved, smooth, or pubescent beneath; peduncles much shorter than the leaves, 1 – 4-flowered; flowers greenish; filaments granular-roughened; berry dark-blue. (P. pubescens, and P. multiflorum, *Pursh.*) — Shady banks, Florida, and northward. May. — Stem 1° – 2° high, naked below. Leaves 3′ – 4′ long, acute or obtuse. Flowers 4″ – 5″ long.

2. SMILACINA, Desf. Solomon's Seal.

Perianth 4- or 6-parted, spreading, deciduous. Stamens 4 or 6, inserted on the base of the perianth: anthers ovate. Ovary 2 – 3-celled, with two ovules in each cell. Style short and thick: stigma obscurely 3-lobed. Berry globular, 1 – 2-seeded. — Stems simple, erect, leafy. Flowers small, white, in a terminal raceme or panicle.

§ 1. Smilacina. *Divisions of the perianth and stamens* 6. *Ovary* 3-*celled.*

1. **S. racemosa,** Desf. Pubescent; rhizoma thick; stem flexuous, curving and leafy above; leaves numerous, 2-ranked, oblong, acuminate, nearly sessile, strongly ribbed; flowers numerous, in a close raceme or panicle; berry red, spotted. — Rich soil in the upper districts, and northward. June and July. — Stem 1° – 2° high. Leaves 3′ – 5′ long.

§ 2. Maianthemum. *Divisions of the perianth and stamens* 4. *Ovary* 2-*celled.*

2. **S. bifolia,** Ker. Smooth; rhizoma slender; stem low, erect, 2-leaved above; leaves ovate, cordate, sessile or clasping, finely nerved; raceme simple, few-flowered; berry red, spotted. — High mountains of North Carolina, and northward. June. — Stem 3′ – 6′ high. Leaves 1′ – 2′ long.

3. CONVALLARIA, L. Lily of the Valley.

Perianth bell-shaped, 6-cleft, deciduous. Stamens 6, inserted on the base of the perianth, included: anthers fixed at the base. Ovary 3-celled, tapering into the thick style. Ovules 4 – 6 in each cell. Stigma truncate. Berry globose, few-seeded. — A perennial stemless herb, with a creeping rhizoma, and white racemose flowers.

1. **C. majalis,** L. — High mountains of North Carolina. May. — Smooth. Rhizoma slender. Leaves two, oblong, their long petioles convolute, one within the other. Scape semi-terete, bearing a 1-sided raceme of fragrant nodding flowers. Berry red.

4. CLINTONIA, Raf.

Perianth bell-shaped, 6-leaved, deciduous. Stamens 6, inserted on the base of the perianth. Filaments filiform; anthers linear-oblong. Ovary 2 – 3-celled, with two or more ovules in each cell. Style elongated: stigma obtuse. Berry 2 – many-seeded. — Stemless herbs, with creeping rootstocks, large radical sheath-

ing leaves, and an umbel of white or greenish flowers terminating the naked scape. Berries blue.

1. **C. umbellata,** Torr. Leaves 2 – 4, oblong, ciliate on the keel and margins; scape pubescent; umbel many-flowered; flowers small (3″ – 4″ long), white spotted with green or purple; ovules 2 in each cell. (Smilacina umbellata, *Desf.*) — Shady woods on the mountains, Georgia, and northward. June. — Scape 8′ – 12′ high, rather longer than the leaves.

2. **C. borealis,** Raf. Leaves obovate-oblong, ciliate on the margins, acute; scape and 2 – 7-flowered umbel pubescent; flowers (6″ – 9″ long) greenish yellow; ovules numerous. — Cold swamps on the high mountains of North Carolina, and northward. June. — Scape and leaves 8′ – 10′ high.

5. ALLIUM, L. Onion.

Perianth 6-parted, spreading, persistent. Stamens 6, inserted on the base of the perianth. Filaments subulate, the interior ones more or less dilated at the base. Ovary 3-celled. Style filiform: stigma entire. Capsule loculicidally 3-valved. Seeds anatropous or campylotropous, single or few in each cell, angled, black. — Strong-scented stemless herbs, with bulbous roots, and a naked scape, ending in an umbel of small flowers, from a 2 – 3-leaved spathe. — Flowers sometimes changed into bulblets.

** Ovules solitary in the cells.*

1. **A. tricoccum,** Ait. Leaves lanceolate-oblong, acute, flat, long-tapering toward the base, early withering; umbel small, dense, many-flowered, erect; leaves of the perianth oblong, obtuse, longer than the stamens. — Mountains of North Carolina, and northward. July. — Bulbs clustered. Scape 1° high. Flowers white.

** * Ovules 2 in each cell.*

2. **A. cernuum,** Roth. Leaves linear, channelled; scape angled; umbel many-flowered, nodding; leaves of the perianth acute; stamens exserted; ovary 6-toothed. — Mountains of South Carolina, and northward. July. — Scape 1° – 1½° high. Flowers rose-color, on slender pedicels.

3. **A. Canadense,** Kalm. Leaves narrowly linear, concave; scape terete; umbel erect, bearing a cluster of bulbets, intermingled with a few stalked rose-colored flowers; spathe 1 – 2-leaved; leaves of the perianth obtuse, as long as the stamens; ovary 6-toothed. — Banks of rivers, Florida, and northward. June. — Scape 1° high. Outer coats of the bulb white and scarious.

4. **A. mutabile,** Michx. Leaves very narrow, concave; scape terete; umbel erect, many-flowered; spathe 3-leaved; leaves of the perianth acute, as long as the stamens, white changing to rose-color. — Dry sandy soil, Florida to North Carolina. May and June. — Scape 1° high. Outer coats of the bulb composed of a network of fine fibres.

** * * Ovules several in each cell.*

5. **A. striatum,** Jacq. Leaves linear, concave; umbel erect, 3 – 10-flowered; spathe 2-leaved; perianth longer than the stamens, white, the exterior

leaves green on the keel. — Low pine barrens, Florida to North Carolina. March and April. — Scape 6′–12′ high. Pedicels 1′–2′ long. Flowers 5″ long. Leaves streaked on the back.

6. **A. Carolinianum,** Red. Scape naked; leaves linear, even beneath; spathe 2-leaved; umbel fastigiate; leaves of the perianth oblong, obtuse; stamens subulate, twice as long as the perianth; capsule many-seeded. — In Carolina. — Bulbs clustered. Flowers white, rose-color without. (*)

6. NOLINA, Michx.

Perianth 6-parted, spreading, withering-persistent; the divisions similar, oblong-lanceolate, 1-nerved. Stamens 6, inserted on the base of the perianth; filaments subulate: anthers cordate. Style very short, persistent: stigmas 3, recurved. Ovary 3-angled, 3-celled, with two anatropous collateral ascending ovules in each cell. Capsule membranaceous, obovate, wing-angled, 3-valved, mostly 1-seeded. Seed oblong-obovate, dull brown and roughish, slightly incurved; longitudinally grooved on the inner face. Embryo slender, straight, shorter than the fleshy albumen. — Root large, bulbous. Leaves numerous, all radical, very long and narrow, recurved, keeled, rough on the margins. Scape branching above. Flowers small, white, crowded in long bracted racemes. Pedicels jointed, reflexed in fruit.

1. **N. Georgiana,** Michx. — Dry sand-hills in the middle districts of Georgia and South Carolina. April and May. — Bulb very large, tunicated. Scape 2°–3° high, with a few scales near the base. Leaves 1°–2° long, dry and harsh.

7. SCHŒNOLIRION, Torr.

Perianth 6-parted, spreading, withering-persistent; the divisions 3–5-nerved. Stamens 6, inserted on the base of the perianth: filaments subulate: anthers cordate-sagittate, introrse. Style subulate, persistent: stigma minutely 3-lobed. Ovary globose, 3-celled, with two anatropous ascending ovules in each cell. Capsule coriaceous, broadly obovate, obtusely 3-lobed, loculicidally 3-valved, 1–6-seeded. Seeds globose or angular, smooth, black, and shining. Embryo straight, as long as the fleshy albumen. — Perennial herbs. Root a tuberous rhizoma. Scape branching above. Radical leaves smooth, equitant, sheathing, linear, concave, rounded on the back, the others small and bract-like. Flowers small, white, in loose bracted racemes. Pedicels spreading, jointed.

1. **S. Michauxii,** Torr. Pedicels 2–4 times the length of the bracts; divisions of the perianth oblong, the nerves somewhat distant. (Phalangium croceum, *Michx.* Ornithogalum croceum, *Ell.*) — Swamps, chiefly in the pine barrens, Georgia, Florida, and westward. May and June. — Rhizoma cylindrical. Scape 2° high, slender. Leaves 1° long.

8. ERYTHRONIUM, L. Dog's-tooth Violet.

Perianth corolla-like, with six spreading or recurved deciduous separate leaves; the three inner ones grooved and 2-toothed at the base. Stamens 6,

slender: anthers oblong-linear, erect. Style slender: stigma 3-lobed. Capsule obovate, 3-angled, many-seeded. Seeds ovoid, with a loose membranaceous appendage at the apex. — Low herbs from a scaly bulb. Stems low, scape-like, bearing near the middle a pair of oblong spotted sheathing leaves, and at the apex a single nodding flower.

1. **E. Americanum,** Smith. Bulbs deep, the younger ones bearing only a single leaf; leaves lanceolate or oblong, tapering into the sheathing base, variegated with pale and deep green; flowers (1′ long) yellow, spotted near the base; style club-shaped, 3-angled; stigma obscurely 3-lobed. — Rich woods, Middle Florida, and northward. Feb. and March.

9. LILIUM, L. Lily.

Perianth corolla-like, 6-leaved, deciduous, the leaves spreading or recurved above, sessile or clawed, with a nectariferous groove near the base. Stamens 6, elongated; anthers linear, extrorse in the bud, versatile. Style filiform, elongated; stigma 3-lobed. Capsule oblong, many-seeded. Seeds flat, membranaceous, horizontal, crowded in the cells. — Leafy herbs, from scaly bulbs. Leaves scattered or whorled, sessile. Flowers large, erect, or nodding.

** Flowers erect: leaves of the perianth spreading, clawed.*

1. **L. Philadelphicum,** L. Leaves lanceolate, the upper ones whorled; flowers 1 – 3, reddish-orange spotted with purple; leaves of the perianth lanceolate, abruptly pointed. — Mountains of North Carolina, and northward. July. — Stem 1° – 2° high. Flowers 2′ long.

2. **L. Catesbæi,** Walt. Leaves linear-lanceolate, all scattered and erect; flower solitary, terminal, scarlet, variegated with yellow and purple; leaves of the perianth lanceolate, acuminate, with the margins of the claws involute; the three inner ones broader and ribbed on the back; capsule oblong, nearly terete. — Low pine barrens, Florida to North Carolina. Aug. and Sept. — Stem 1° – 2° high. Leaves 1′ – 2′ long, obscurely nerved. Flowers 3′ – 4′ long.

** * Flowers nodding; leaves of the perianth recurved, sessile.*

3. **L. Canadense,** L. Stem commonly few-flowered; leaves in remote whorls, lanceolate, 3-nerved, hairy on the nerves beneath; flowers long-peduncled; leaves of the perianth recurved, yellow spotted with purple. — Mountain-meadows, Georgia, and northward. June and July. — Stem 2° – 3° high. Leaves and flowers 2′ – 3′ long.

4. **L. superbum,** L. Stem commonly many-flowered; leaves smooth, lanceolate, 3-nerved, the lower ones whorled, the upper scattered; leaves of the perianth revolute, rather obtuse, orange spotted with purple. — Rich soil in the middle and upper districts, Georgia, and northward. June and July. — Stem 3° – 6° high. Flowers, when numerous, disposed in a pyramidal raceme.

Var. **Carolinianum.** (L. Carolinianum, *Michx.*) Leaves often all scattered, broader, more tapering at the base, faintly nerved; flowers 1 – 3; leaves of the perianth acute. — Swamps in the lower districts. July. — Stem 2° – 3° high.

10. YUCCA, L. Spanish Bayonet.

Perianth cup-shaped, corolla-like, 6-leaved. Sepals and petals nearly alike, late-deciduous. Stamens 6, with thick granular club-shaped filaments: anthers small, oval. Ovary 3-celled, 3-sided, grooved at the angles. Stigmas 3, nearly sessile, oblong, concave, 2-cleft. Ovules numerous, in two rows, the rows separated by a false partition. Capsule oblong, 6-celled, pulpy and indehiscent, or dry and loculicidally 3-valved at the apex. Seeds numerous, flat, horizontal, smooth and black. — Plants with thick palm-like leafy stems (caudex), numerous rigid and spine-pointed leaves, and white showy panicled flowers.

** Stem short: capsule dry, 3-valved.*

1. **Y. filamentosa,** L. (Bear-Grass.) Stem short and leafy; leaves rather rigid, spreading or recurved, varying from linear to broad-lanceolate, green or glaucous, with thread-like filaments on the margins; scape elongated, branching and pubescent above; leaves of the perianth ovate-lanceolate, white tinged with yellow or purple; capsule with 3 rounded angles, loculicidal at the apex, and at length separating at the inflexed sutures into three 2-celled carpels. (Y. puberula and Y. glaucescens, *Haw.*) — Light or sandy soil, Florida to North Carolina, and westward. June. — Stem rarely more than a foot above the ground. Leaves 1° – 2° long. Scape 4° – 6° high.

** * Stem tall: capsule pulpy, 6-angled, indehiscent.*

2. **Y. gloriosa,** L. Stem mostly simple, leafy at the summit; leaves linear-lanceolate, rigid, smooth on the margins; panicle large, smooth, pyramidal, short-peduncled; flowers white, single or clustered; leaves of the perianth lanceolate, acute. — Drifting sands along the coast, Florida to North Carolina, and westward. May and June. — Stem 2° – 4° high. Leaves 1° – 1½° long. Panicle 2° – 3° long.

3. **Y. aloifolia,** L. Stem mostly branching, leafy above; leaves linear-lanceolate, very rigid, strongly spine-pointed, very rough on the margins, the lower ones reflexed; panicle short, smooth, densely flowered, nearly sessile; divisions of the perianth ovate-lanceolate, white tinged with purple. (Y. Draconis, *L.* Y. serrulata, *Haw.*) — Sands along the coast, Florida to North Carolina. May and June. — Stem 4° – 8° high. Leaves and panicle 1° – 1½° long.

4 **Y. recurvifolia,** Salisb. Leaves linear-lanceolate, recurved, with the margins sometimes filamentose; interior leaves of the perianth wider than the exterior. — On the sea-coast of Georgia, *Elliott.* July and Aug. — Stem about 3° high. Flowers white, tinged occasionally with green and purple. (*)

Order 152. MELANTHACEÆ. (Colchicum Family.)

Perennial herbs, with parallel-nerved leaves, and regular flowers. Perianth of 6 nearly equal divisions, free from or coherent with the base of the 3-celled ovary. Stamens 6 (in Pleea 9 – 12), inserted on the base of the perianth: anthers extrorse (except in Tofieldia and Pleea). Styles

3, distinct or more or less united. Fruit a capsule or berry. Seeds anatropous. Embryo minute, in copious albumen.

Synopsis.

SUBORDER I. UVULARIEÆ. (THE BELLWORT FAMILY.) Perianth corolla-like, bell-shaped, the divisions distinct and deciduous. Styles partly or wholly united. Fruit a few-seeded capsule or berry. — Stems forking and leafy above, sheathed below. Leaves ovate or lanceolate, sessile or clasping. Flowers perfect, solitary, nodding.

1. UVULARIA. Fruit a 3-lobed loculicidal capsule. Flowers on short lateral branches.
2. PROSARTES. Fruit a 3–6-seeded berry. Flowers terminal, on straight peduncles.
3. STREPTOPUS. Fruit a many-seeded berry. Flowers axillary, on bent peduncles.

SUBORDER II. MELANTHIEÆ. (THE COLCHICUM FAMILY.) Perianth spreading; the divisions mostly distinct, often clawed, withering-persistent. Styles separate. Fruit a 3-celled capsule. — Stems leafy at the base, simple or branched. Flowers in racemes or panicles, sometimes polygamous or dicœcious.

* Anther-cells confluent.

+ Leaves of the perianth biglandular near the base.

4. MELANTHIUM. Flowers polygamous. Filaments partly adhering to the claws of the perianth.
5. ZIGADENUS. Flowers perfect. Filaments free from the perianth.

+ + Leaves of the perianth glandless.

6. STENANTHIUM. Leaves of the perianth lanceolate, acute, coherent with the base of the ovary, longer than the stamens.
7. VERATRUM. Leaves of the perianth oblong or obovate, free from the ovary, longer than the stamens and short styles. Flowers polygamous.
8. AMIANTHIUM. Leaves of the perianth obovate, free, shorter than the stamens and slender styles. Flowers perfect, racemed.
9. SCHŒNOCAULON. Leaves of the perianth oblong, shorter than the stamens, much longer than the very short styles. Flowers perfect, spiked.

* * Anther-cells distinct.

+ Capsule loculicidal.

10. XEROPHYLLUM. Flowers perfect. Capsule 6-seeded. Radical leaves grass-like.
11. CHAMÆLIRIUM. Flowers dicœcious. Capsule many-seeded. Radical leaves obovate.

+ + Capsule septicidal. Leaves equitant. Anthers introrse.

12. PLEEA. Stamens 9–12. Anthers versatile. Bracts spathe-like.
13. TOFIELDIA. Stamens 6. Anthers erect. Bracts short.

1. UVULARIA, L. BELLWORT.

Perianth bell-shaped, corolla-like, the divisions distinct, grooved at the base within, deciduous. Filaments short: anthers linear, adnate. Style deeply 3-cleft: stigmas spreading. Capsule 3-lobed or 3-angled, loculicidally 3-valved at the apex. Seeds few, obovoid, half encircled by the tumid raphe. — Low herbs,

from a slender, creeping rhizoma. Leaves sessile or perfoliate. Flowers nodding, solitary, lateral or at the apex of a 1-leaved branch, yellow.

** Leaves rounded at the base, perfoliate.*

1. **U. perfoliata,** L. Leaves ovate or oblong, glaucous beneath, the sides revolute when young; leaves of the perianth lanceolate, acute, granular-roughened within, pale yellow; capsule obovate, truncate. (U. flava, *Smith.*) — Woods and thickets, Florida, and northward. April. — Stem 8′ – 12′ high. Leaves 1½′ – 2½′ long. Flowers 1′ long.

2. **U. grandiflora,** Smith. Leaves oblong, pale or closely pubescent beneath, the young ones revolute on the margins; leaves of the perianth linear-lanceolate, acute, smooth within, greenish yellow; anthers obtuse; capsule obovate. — Woods and thickets, in the upper districts of Georgia, and northward. April. — Larger than the preceding. Leaves 2′ – 5′ long. Flowers 1½′ long.

** * Leaves narrowed at the base, sessile.*

3. **U. sessilifolia,** L. Smooth; leaves lanceolate-oblong, glaucous beneath; flowers on short naked peduncle-like branches, opposite the leaves; leaves of the perianth lanceolate, obtuse, barely longer than the 3-cleft style; anthers obtuse; capsule obovate, stalked. — Rich soil in the middle and upper districts, and northward. April. — Stem 6′ – 12′ high. Leaves 1′ – 1½′ long. Flowers 8″ long.

4. **U. Floridana,** n. sp. Smooth; leaves oblong, slightly clasping, glaucous beneath; flowers on a slender 1-leaved branch; leaves of the perianth linear-lanceolate, acuminate, twice as long as the 3-cleft style; anthers pointed. — Low shady woods, Middle Florida, March. — Stem 4′ – 6′ high. Leaves thin, 1′ long. Flowers 8″ long, pale yellow.

5. **U. puberula,** Michx. Slightly pubescent; leaves green on both sides, oval, rounded at the base and somewhat clasping, rough on the margins; style 3-parted nearly to the base, as long as the short-pointed anthers; capsule ovate, sessile. — Mountains of North Carolina. — Flowers yellowish-white.

2. PROSARTES, Don.

Perianth bell-shaped, corolla-like, the divisions distinct, deciduous. Filaments filiform, much longer than the linear-oblong obtuse anthers. Styles united: stigmas spreading. Berry ovoid, acute, 3 – 6-seeded. — A low forking herb. Peduncles terminal, not bent nor twisted.

1. **P. lanuginosa,** Don. (Streptopus lanuginosus, *Michx.*) — High mountains of North Carolina. June. — Leaves 2′ – 3′ long, sessile, ovate-oblong, acuminate, oblique or slightly cordate at the base, 5-nerved, pubescent. Peduncles 1 – 2, terminal, slender, pubescent. Leaves of the perianth ½′ long, lanceolate, acuminate, 3-nerved, greenish. Style smooth. Berry red.

3. STREPTOPUS, Michx.

Perianth bell-shaped, corolla-like, with the divisions distinct, deciduous, the inner ones keeled. Anthers sagittate, fixed near the base, entire, or 2-pointed at

the apex, longer than the filaments. Styles united: stigma 3-cleft or entire. Berry nearly globose, many-seeded. — Erect herbs, with spreading branches. Leaves clasping. Peduncles opposite the leaves, bent or twisted in the middle.

1. **S. roseus,** Michx. Stem much branched, with the branches flexuous and sprinkled with hairs; leaves ovate, or the uppermost lanceolate, acuminate, slightly clasping, ciliate on the margins, 5 – 7-nerved; flowers mostly solitary, small, rose-color, nodding; anthers 2-pointed at the apex; stigma 3-cleft. — Shady woods on the mountains of Georgia, and northward. May. — Stem 2° high. Leaves 2′ – 4′ long, green on both sides. Flowers 3″ – 4″ long.

4. MELANTHIUM, L.

Flowers monœciously polygamous. Divisions of the perianth spreading, long-clawed, somewhat cordate or hastate and biglandular at the base; the filaments partly adhering to their claws: anthers reniform, becoming peltate, the cells confluent. Styles 3, subulate. Capsule membranaceous, 3-lobed, the cells separating and opening down the inner suture, several-seeded. Seeds flat, winged. — Stems tumid at the base, rough-pubescent above. Leaves long, linear. Flowers panicled, cream-color, turning brownish.

1. **M. Virginicum,** L. Stem tall, simple, the upper portion, like the loose panicle, pubescent and somewhat hoary; lowest leaves long, broadly linear and clasping, the upper small and sessile; flowers shorter than the pedicels, the upper ones perfect; leaves of the perianth oblong or roundish, often acute, the slender claw adnate to the lower half of the filaments; glands conspicuous. (M. hybridum, *Walt.*, the claws concave and adnate to the filaments below the middle; glands connivent or obscure.) — Swamps, Florida, and northward. July and Aug. — Stem 3° – 4° high. Lowest leaves 1° – 1½° long.

5. ZIGADENUS, Michx.

Flowers perfect. Leaves of the perianth ovate or oblong, spreading, sessile or nearly so, 1 – 2-glandular at the base. Filaments free from the perianth, and of equal length: anthers broadly cordate, becoming peltate. Styles 3, slender, spreading. Capsule membranaceous, 3-angled, septicidal at the apex, many-seeded. Seeds oblong, wingless, or slightly margined. — Stems smooth and simple. Lowest leaves crowded, linear. Flowers white, in crowded panicles.

1. **Z. glaberrimus,** Michx. Stem rigid, leafy; lowest leaves broadly linear, elongated, glaucous beneath, the upper small and scattered; panicle small, rigid; bracts ovate; leaves of the perianth oblong, short-clawed, often with a white callus on one or both sides at the base; glands prominent; stamens and styles subulate; seeds oblong — Pine-barren swamps, Florida to North Carolina. June and July. — Stem 2° – 3° high. Lowest leaves 1° – 1½° long. Panicle 6′ – 12′ long, commonly dense. Flowers 1′ in diameter, as long as the pedicels.

2. **Z. leimanthoides,** Gray. Stem slender, somewhat naked above; leaves narrowly linear, green on both sides; panicle slender; bracts lanceolate; leaves of the perianth oval or obovate, sessile, the glands obscure or wanting;

stamens and styles filiform; seeds narrowly margined, winged at the apex. (Helonias graminea, *Ell.*) — Mountain swamps, Georgia, and northward. July and Aug. — Stem 2° – 4° high. Lowest leaves 1° – 2° long. Panicle 8′ – 12′ long. Flowers 4″ in diameter, much shorter than the slender pedicels.

6. STENANTHIUM, Gray.

Flowers perfect or polygamous. Leaves of the perianth lanceolate, acuminate, united at the base, and adnate to the base of the ovary, longer than the stamens. Glands none. Anthers roundish, becoming peltate. Styles short, subulate: stigmas minute. Capsule ovate, membranaceous, septicidal at the apex, several-seeded. Seeds nearly wingless. — Stem smooth, slender, tumid at the base. Lowest leaves elongated, channelled. Flowers small, greenish-white, in a simple panicle.

1. **S. angustifolium,** Gray. (Veratrum angustifolium, *Pursh.*) — Shady woods and banks, Florida, and northward. June and July. — Stem 2° – 3° high. Lowest leaves 1° – 2° long. Panicle 1° – 2° long, composed of simple spiked racemes; the lower flowers often sterile. Perianth about 4″ in diameter, nearly sessile, twice as long as the stamens.

7. VERATRUM, Tourn. False Hellebore.

Flowers polygamous. Leaves of the perianth spreading, distinct, oblong or obovate, narrowed at the base, free from the ovary, glandless, longer than the stamens. Styles short, subulate. Capsule oblong, membranaceous, 3-pointed, the cells opening above at the inner suture. Seeds few, flat, broadly winged. — Stems leafy, tumid at the base, pubescent. Leaves oval or oblong, plaited. Flowers in ample panicles, green or purplish-brown.

1. **V. viride,** L. Stem stout, leafy throughout; leaves broadly oval, acute, strongly plaited, clasping, pubescent beneath; panicle pyramidal, composed of numerous dense racemes; divisions of the perianth oblong, smooth, yellowish green, longer than the pedicels and twice as long as the stamens. — Mountain meadows, Georgia, and northward. April and May. — Stem 3° – 7° high. Lower leaves 1° long. Flowers large. — The plant is possessed of active, but deleterious properties.

2. **V. intermedium,** n. sp. Stem slender, leafy; lowest leaves nearly smooth, lanceolate or oblong, acute, narrowed into a long sheathing petiole, strongly plaited, the upper ones small, lanceolate, scattered, pubescent beneath; panicle large, composed of long and slender loosely-flowered racemes; leaves of the perianth spatulate-oblong, dark brown within, hoary puberulent without, as long as the pedicels, rather longer than the stamens; ovary woolly; lobes of the capsule winged; seeds linear-oblong, broadly winged. — Rich shady hummocks, Middle Florida. July. — Stem 3° – 5° high. Lower leaves 1° long. Flowers 6″ – 8″ wide. Intermediate between V. Woodii, *Robbins*, and the next, of which it may prove to be a variety.

3. **V. parviflorum,** Michx. Stem slender, naked above; leaves varying from lanceolate to oval, smooth, slightly plaited, narrowed into sheathing peti-

oles; panicle slender, long and spreading, loosely flowered; leaves of the perianth greenish, spatulate, smooth, rather shorter than the pedicels, twice as long as the stamens; ovary smooth. — Mountains of North Carolina. July. — Stem 2° – 5° high. Lowest leaves 9′ – 12′ long. Flowers 4″ – 5″ wide.

8. AMIANTHIUM, Gray. Fly-Poison.

Flowers perfect. Leaves of the perianth oblong or obovate, sessile, spreading, glandless, shorter than the slender stamens. Anthers kidney-shaped, becoming peltate. Styles slender: stigmas minute. Capsule membranaceous, 3-lobed, the cells separating and opening down the inner suture, few-seeded. Seeds oblong or linear, wingless. — Stems simple, smooth, tumid or bulbous at the base, scape-like above. Lowest leaves long and crowded. Flowers white, in a simple raceme.

1. **A. muscætoxicum,** Gray. Stem bulbous at the base, somewhat angled; lowest leaves strap-shaped, obtuse, channelled, the uppermost small and bract-like; raceme cylindrical, densely flowered; leaves of the perianth oblong, nearly equalling the stamens; styles spreading; seeds ovoid, red. (Helonias erythrosperma, *Michx.*) — Rich woods, Florida, and northward. May and June. — Stem 1° – 2° high. Flowers small, turning greenish.

2. **A. angustifolium,** Gray. Stem tumid at the base, slender, terete; leaves linear, acute, channelled, somewhat glaucous, the lowest very long, the uppermost small and bract-like; raceme oblong, mostly densely flowered; leaves of the perianth oval, shorter than the stamens; styles erect; seeds linear. (Helonias angustifolia, *Michx.*) — Low pine barrens, Florida to North Carolina. May and June. — Stem 2° high. Flowers turning purple.

3. **A.? aspericaule,** Gray. Stem and flowers pulverulent-roughened; stem-leaves linear-lanceolate, flat; flowers in a small (2′ long) spike-like panicle, composed of spiked racemes. — Near Columbia, South Carolina, *Curtis.* — Plant imperfectly known.

9. SCHŒNOCAULON, Gray.

Flowers perfect. Leaves of the perianth somewhat spreading, linear-oblong, glandless; filaments subulate, at length twice as long as the perianth: anthers kidney-shaped, becoming peltate. Ovary 6 – 8-ovuled. Styles very short: stigmas minute. Capsule and seeds unknown. — Scape very slender, bulbous at the base. Leaves all radical, very long and narrow, dry, channelled. Flowers small, pale green, crowded in a slender spike.

1. **S. gracilis,** Gray. (Helonias? dubia, *Michx.*) — Dry sands, Georgia and Florida. April and May. — Leaves 1° – 2° long, scarcely 1″ wide. Scape 2° – 3° high, rush-like. Spike 3′ – 4′ long.

10. XEROPHYLLUM, Michx.

Flowers perfect. Leaves of the perianth widely spreading, sessile, oval, as long as the subulate filaments. Anthers round-ovate, 2-celled. Styles filiform:

stigmas decurrent within. Capsule roundish, 3-lobed, loculicidally 3-valved. Seeds 2 in each cell, collateral, oblong, wingless. — Stem bulbous at the base, simple, leafy. Leaves dry, rigid, rough on the margins, very narrow, dilated at the base; those of the stem very numerous and needle-shaped. Flowers white, in a simple dense raceme.

1. **X. asphodeloides,** Gray. (Helonias asphodeloides, *L.*) — Dry sandy soil, North Carolina, and northward. May and June. — Stem 3° – 5° high. Radical leaves spreading, 1° or more long, very slender-pointed. Flowers 2″ long. Stamens dilated below.

11. CHAMÆLIRIUM, Willd.

Flowers dicœcious. Leaves of the perianth linear-spatulate, shorter than the filiform filaments. Anthers 2-celled, roundish. Styles club-shaped: stigmas decurrent. Capsule ovoid, 3-angled, loculicidally 3-valved, many-seeded. Seeds linear-oblong, winged at the ends. — Stem simple, from a thick rhizoma, leafy. Lowest leaves spatulate or obovate, the others linear or lanceolate. Flowers small, white, in a simple spiked raceme.

1. **C. luteum,** Gray. (Helonias dioica, *Pursh.*) — Low grounds, Florida, and northward. May and June. — Stem 1° – 2° high, furrowed. Radical leaves clustered, 2′ – 4′ long, spreading; the uppermost small and bract-like. Racemes 6′ – 12′ long, the sterile ones slender and drooping at the summit; the fertile rigid and erect. Perianth inconspicuous.

12. PLEEA, Michx.

Flowers perfect. Leaves of the perianth sessile, widely spreading, lanceolate, rigid. Stamens 9 – 12, shorter than the perianth: filaments slender: anthers linear, introrse, 2-cleft at the base, versatile. Styles short, subulate. stigmas simple. Capsule coriaceous, ovate, 3-lobed, many-seeded; the cells opening down the inner suture. Seeds oblong, bristle-pointed. — Stems smooth and slender, from clustered rootstocks. Leaves chiefly radical, very narrow, 2-edged, equitant. Flowers few in a simple raceme, white. Bracts spathe-like, clasping.

1. **P. tenuifolia,** Michx. — Pine-barren swamps and bogs, Florida to North Carolina. Oct. — Stem rush-like, 2° high. Radical leaves erect, rigid, perennial, 6′ – 9′ long. Raceme rigid, 6 – 9-flowered, the erect pedicels enclosed in the rigid clasping bracts. Flowers 1′ wide, greenish without.

13. TOFIELDIA, Hudson.

Flowers perfect. Leaves of the perianth spreading, sessile, oblong or obovate. Filaments subulate: anthers innate or introrse, 2-celled. Styles subulate: stigmas terminal. Capsule 3-angled, septicidally 3-partible, many-seeded. Seeds oblong. — Stems simple, scape-like, from creeping rootstocks. Leaves linear, 2-edged, equitant. Flowers small, whitish, in spikes or racemes. Pedicels commonly minutely 3-bracted under the flower.

§ 1. TOFIELDIA proper. *Racemes simple, the flowers successively opening from the base upward (centripetal): anthers introrse: seeds without appendages. — Smooth herbs.*

1. **T. glabra,** Nutt. Stem leafy at the base, and sparingly above; leaves linear; racemes densely flowered; stamens slightly exserted; styles very short. (T. glaberrima, *Macbride.*) — Low pine barrens, in the middle and lower districts of North and South Carolina. Oct. — Stem 1° - 2° high. Raceme 2′ - 4′ long. Flowers white.

§ 2. TRIANTHA. *Racemes compound; the flowers successively opening from the apex downward (centrifugal): anthers innate: seeds with tail-like appendages at each end. — Pubescent herbs.*

2. **T. pubens,** Ait. Stem and pedicels rough-puberulent; leaves long, linear; racemes (3′ - 6′ long) loosely flowered; pedicels mostly three in a cluster, longer than the greenish-white flowers; capsule as long as the perianth. — Low pine barrens, Florida to North Carolina, and westward. Sept. — Stem 1° - 1½° high. Leaves 6′ - 12′ long.

3. **T. glutinosa,** Willd. Stem and pedicels clammy-pubescent; leaves short, linear-sword-shaped; racemes (1′ long) dense-flowered, pedicels 3 - 5 in a cluster, shorter than the yellowish flowers; capsule longer than the perianth. — Mountains of North Carolina, and northward. June. — Stem 1° - 1½° high. Leaves 4′ - 6′ long.

ORDER 153. JUNCACEÆ. (RUSH FAMILY.)

Tough grass-like herbs, with naked or leafy and jointed stems, flat or terete leaves, and regular cymose-clustered or panicled flowers. — Perianth of six nearly equal calyx-like persistent divisions. Stamens 3 or 6, inserted on the base of the sepals: anthers 2-celled, introrse, fixed at the base. Ovary free from the perianth, 1 - 3-celled, 3 - many-ovuled. Style single: stigmas commonly 3, hairy. Capsule septicidally 3-valved. Seeds anatropous. Embryo minute at the base of the albumen.

Synopsis.

1. LUZULA. Capsule 1-celled, 3-seeded. Leaves mostly hairy.
2. JUNCUS. Capsule many-seeded; the placentæ separating with the partitions. Smooth herbs, with alternate leaves.
3. CEPHALOXYS. Capsule many-seeded, the placentæ united into a 3-winged central column. Stem-leaves nearly opposite.

1. LUZULA, DC. WOOD-RUSH.

Sepals flat. Stamens 6. Style very short: stigmas filiform, villous. Capsule 1-celled, 3-valved, 3-seeded. Seeds erect from the base of the cell. — Perennial herbs, with flat mostly hairy leaves, and umbellate or spiked flowers.

1. **L. campestris,** DC. Stem leafy; leaves linear, hairy; flowers in dense ovoid umbellate spikes; capsule roundish; seeds with a conical appendage at the base. (Juncus campestris, *L.*) — Dry woods and banks, Florida, and northward. March and April. — Stems clustered, 1° high.

2. **L. pilosa,** Willd. Stem leafy; leaves linear or lanceolate-linear, hairy; flowers single, umbellate; capsule ovate; seeds with a curved appendage at the apex. — Mountains of North Carolina, and northward. May. — Plant 6′ – 9′ high.

2. JUNCUS, L. Rush.

Outer sepals keeled. Stamens 3 or 6. Style very short: stigmas villous. Capsule 3-celled, or imperfectly 3-celled; the partitions adherent to the valves, and bearing the placentæ at their inner edges. Seeds numerous, often appendaged, horizontal. — Chiefly perennial. Leaves alternate, often knotted by cross partitions. Flowers mostly green, clustered, cymose, or panicled.

§ 1. *Stems scape-like, jointless, sheathed or leafy at the base: stamens* 6 *or* (*in No.* 1) *sometimes* 3.

* *Panicles lateral: stem sheathed at the base.*

1. **J. effusus,** L. Stem soft and spongy; sheaths dark brown; panicle diffuse or contracted; flowers single; sepals lanceolate, as long as the obovate obtuse obscurely 3-angled light brown capsule. — Bogs and swamps, Florida, and northward; common. May – Sept. — Stems tufted, 2° – 4° high.

* * *Panicles lateral: stem leafy at the base: leaves terete, pungent.*

2. **J. setaceus,** Rostk. Stem and leaves slender; sheaths light brown; panicle simple, few-flowered; flowers single; sepals rigid, lanceolate-ovate, rather longer than the globose pointed green capsule. — Low grounds and swamps, Florida, and northward. May – July. — Stems growing in small tufts, 1° – 3° high. Capsule coriaceous.

3. **J. maritimus,** Lam. Stem and leaves stout and rigid, hard-pointed; panicle compound; flowers small, 4 – 8 in a cluster; sepals lanceolate, as long as the small obovate obtuse dark brown capsule. (J. acutus, *Muhl.*) — Brackish marshes along the coast, Florida, and northward. April and May. — Stem 4° – 5° high.

* * * *Panicles terminal, forking: leaves channelled or grooved; the upper ones forming an involucre under the panicle.*

4. **J. tenuis,** Willd. Stems tough, not tumid at the base, several-leaved; leaves narrowly linear, channelled; involucre longer than the panicle; flowers single; sepals lanceolate, very acute, one third longer than the ovoid capsule. — Low grounds, Florida, and northward. May and June. — Stem 6′ – 12′ high. Panicle small, the flowers mostly on one side of the branches. Capsule light green.

5. **J. dichotomus,** Ell. Stem tumid at the base, 1 – 3-leaved; leaves filiform, nearly terete, slightly grooved on the inner side; involucre mostly shorter than the cymose panicle; flowers single; sepals rigid, ovate-lanceolate,

very acute, as long as the globose dark green capsule. — Low grounds, Florida to North Carolina. May and June. — Stem 1° – 3° high. Panicle dense or elongated.

§ 2. *Stems jointed, leafy: clusters or panicles terminal.*

* *Leaves terete or somewhat flattened, knotted: stamens* 3.

6. **J. scirpoides,** Lam. Rigid; stem stout, erect; leaves terete, panicle erect, contracted, the few large globose green or brownish heads composed of several more or less distinct smaller ones; sepals lanceolate-subulate, as long as the lanceolate taper-pointed 3-angled capsule; seed ovoid, reticulated, without appendages. (J. echinatus, *Ell.*) — Varies with the smaller more numerous and crowded heads conspicuously lobed by the more distinct clusters, and with broader and shorter sepals and capsules. — Sandy swamps, Florida to North Carolina. July – Sept. — Stem 2° high, from a thick and creeping rhizoma. Heads 4″ – 7″ in diameter.

7. **J. polycephalus,** Ell., Michx. in part. Stem tall, slender, compressed near the base; leaves long, flattened, and often somewhat sword-shaped; panicle large, widely spreading, the numerous globose many-flowered pale heads sessile, or on long diverging peduncles; sepals linear-subulate, shorter than the lanceolate-subulate 3-angled capsule; seeds oblong, striate, barely pointed. — Ponds and miry margins of streams, Florida to North Carolina. July – Sept. — Stem 2° – 4° long. Leaves weak, 1° – 2° long, sometimes $\frac{1}{2}$′ wide.

Var.? **depauperatus,** Torr. Stem and leaves more slender; heads smaller and fewer-flowered; sepals lanceolate, shorter than the oblong capsule — Wet places, Georgia, and northward. — Roots fibrous. Stems often decumbent and rooting.

8. **J. paradoxus,** Meyer. Stem rigid, erect, terete; leaves terete; panicle erect; heads pale, 8 – 15-flowered, sessile, and on short erect peduncles; sepals lanceolate-subulate, rigid, shorter than the oblong 3-angled abruptly pointed capsule; seeds with a long and slender appendage at each end. — Wet places, South Carolina, *Curtis*, and northward. July – Sept. — Stem 1° – 2° high.

9. **J. acuminatus,** Michx. Stem erect, terete, like the slender leaves; panicle mostly simple, erect; heads (2″ – 3′ long) 3 – 8-flowered; sepals linear-lanceolate, half as long as the lanceolate-oblong abruptly pointed 3-angled light brown capsule; seeds with a short appendage at each end. — Sandy wet places in the middle districts of Georgia, and northward. July – Sept. — Stem 8′ – 15′ high. Root fibrous. Capsule 2″ long.

10. **J. Elliottii.** Stem slender, nearly terete; leaves terete, grooved near the base within; panicle erect, simple or compound; heads (1″ – 2″ long) 5 – 8-flowered; sepals ovate-lanceolate, as long as the ovoid obscurely angled obtuse deep chestnut capsule; seeds oblong, striate, without appendages. (J. acuminatus, *Ell.*, not of *Michx.*) — Bogs and ditches, Florida to North Carolina. June – Aug. — Root fibrous, often bearing small tubers. Stem 1° – 2° high. Heads commonly very numerous. Capsule 1″ long, shining.

* * *Leaves terete, knotted: stamens* 6 *: flowers clustered.*

11. **J. caudatus,** n. sp. Rigid throughout; stem stout, from a thick and creeping rhizoma; leaves commonly 3, short and pungent; panicle erect, compound, mostly contracted; clusters numerous, more or less crowded, 2 – 4-flowered; sepals lanceolate, acute, unequal, the inner ones half as long as the oblong obtuse-angled acute capsule; seeds with a long and tail-like appendage at each end, white and shining. — Pine-barren swamps and bogs, Middle and West Florida. Aug. and Sept. — Stem 2° high. Leaves 2′ – 6′ long, strongly knotted. Capsules light brown, turning almost black.

* * * *Leaves terete, obscurely knotted: stamens* 6 : *flowers solitary, in slender* 1*-sided cymose panicles, often transformed into a tuft of rudimentary leaves.*

12. **J. abortivus,** n. sp. Rhizoma creeping, thick and woody; stems slender (1° - 2° high), terete; leaves filiform, rather rigid; panicle compound, diffuse, the branches almost hair-like; flowers minute, scattered; sepals oblong, the inner ones obtuse, with membranaceous margins, as long as the (immature) subulate capsule; style slender. — Grassy margins of ponds, near the coast, West Florida. July – Sept. — Plant deep green. Flowers all abortive or bud-like.

13. **J. Conradi,** Tuckerm. Rhizoma creeping, filiform; stems slender (6′ – 10′ high); leaves filiform, tender; panicle compound, diffuse; the small flowers somewhat scattered; sepals acutish, shorter than the oblong taper-pointed capsule; seeds without appendages. — Sandy margins of ponds and swamps, South Carolina, and northward. July. — Leaves more slender, and the divisions of the panicle shorter and more rigid than those of the preceding species.

* * * * *Leaves knotless, concave or flattened.*

14. **J. marginatus,** Rostk. Stems flattened (1° – 2° high); leaves linear, flat or concave; panicle mostly simple; heads few – many-flowered, rarely solitary or by pairs; flowers triandrous; exterior sepals lanceolate or ovate-lanceolate, awn-pointed; the interior oblong, obtuse, broadly margined, about as long as the globular dark brown capsule; seeds oblong, acute at each end. (J. aristulatus, *Michx.* J. cylindricus, *Curtis*, the many-flowered heads cylindrical.) — Var. BIFLORUS. (J. biflorus, *Ell.*) Stems taller (2° – 3° high); panicle decompound, diffuse; heads very numerous, 2 – 4-flowered; seeds narrower and more pointed. — Ditches and low grounds, Florida, and northward. July – Sept. — The variety is confined to the pine barrens of the lower districts.

15. **J. bufonius,** L. Annual; stems low (2′ – 8′ high), tufted; often branched; leaves very narrow; panicles forking; flowers solitary or 3 – 6 in a cluster; sepals whitish, lanceolate, acute, longer than the oblong obtuse pale capsule. — Damp cultivated ground, apparently introduced. April and May.

3. CEPHALOXYS, Desv.

Flowers as in Juncus. Stamens 3. Capsule many-seeded, 3-celled, the partitions separating from the valves at maturity, and forming, with the united placentæ, a free 3-winged central column. Seeds ovoid, without appendages. —

A smooth herb, with fibrous roots, flat and branching stems, short sword-shaped equitant leaves, and clustered greenish flowers.

1. **C. flabellata,** Desv. Stems mostly creeping or floating; leaves linear-sword-shaped; those of the stem nearly opposite; heads cymose, scattered, top-shaped, several-flowered; sepals rigid, lanceolate-subulate, slender-pointed, the exterior ones strongly keeled, and as long as the linear-oblong obtuse capsule, much shorter than the flat interior ones; filaments exserted. (Juncus repens, *Michx.*) — Miry banks of streams and ponds, Florida to North Carolina. July. — Stems $\frac{1}{2}$° – 3° long.

Order 154. PONTEDERIACEÆ. (Pickerel-weed Family.)

Perennial aquatic or marshy herbs, with perfect mostly irregular flowers from a 1-leaved spathe. — Perianth corolla-like, unequally 6-cleft or 6-parted, imbricated in the bud, withering-persistent. Stamens 3 – 6, more or less unequal, and unequally inserted on the throat of the perianth: anthers 2-celled, erect, introrse. Ovary free. Style single: stigma 3 – 6-lobed. Capsule 1 – 3-celled, 1 – many-seeded. Seeds anatropous. Embryo slender in mealy albumen.

1. PONTEDERIA, L. Wampee. Pickerel-weed.

Perianth funnel-shaped, 2-lipped, with the upper lip 3-lobed, the lower 3-parted, the curved tube fleshy and coiled in fruit. Stamens 6, unequally inserted; the three lower ones exserted, the three upper short and often imperfect: anthers oval, blue. Ovary 3-celled, two of the cells empty, the other with a single suspended ovule. Style slender. Capsule (utricle) 1-seeded. — Rhizoma thick and creeping. Stem erect, bearing above the middle a single short-petioled leaf, and at the summit a hairy spike of blue flowers, from a 1-leaved spathe. Radical leaves long-petioled, sheathing.

1. **P. cordata,** L. Stem and terete petioles erect (2° – 3° high); leaves (3′ – 8′ long) varying from round-cordate to lance-oblong, obtuse, finely nerved; spike dense, cylindrical (2′ – 4′ long), the peduncle enclosed in the convolute spathe; upper lobe of the hairy perianth spotted with yellow, the tube 6-ribbed. (P. lancifolia, *Muhl.*, and P. angustifolia, *Pursh*, are narrow-leaved forms.) — Miry margins of ponds and rivers, Florida, and northward. July – Sept.

2. SCHOLLERA, Schreb.

Perianth salver-form, nearly equally 6-lobed, the tube elongated and filiform. Stamens 3, nearly equal: filaments subulate: anthers sagittate-oblong, yellow. Style long and slender. Capsule oblong, 1-celled, loculicidally 3-valved, with three parietal placentæ many-seeded. — A small aquatic herb, with slender branching stems, linear sessile leaves, and a small terminal yellow flower.

1. **S. graminea,** Willd. Stem submerged, forking, leaves thin, pellucid; flowers expanding at the surface of the water; spathe convolute; lobes of the perianth linear, spreading. (Leptanthus, *Michx.*) — In flowing water, North Carolina, and northward. July and Aug. — Stems 1° – 2° long. Leaves 3′ – 6′ long. Tube of the perianth 1½′ long.

Order 155. COMMELYNACEÆ. (Spiderwort Family.)

Herbs, with chiefly fibrous roots, jointed and leafy stems, and perfect or somewhat polygamous often irregular flowers. — Perianth of three herbaceous or colored persistent sepals, and three fugacious petals. Stamens 6, hypogynous, perfect, or a part of them sterile: anthers 2-celled, often of two forms. Styles single: stigma entire. Ovary free from the perianth, 2 – 3-celled, with 1 – several orthotropous ovules in each cell. Capsule loculicidally 2 – 3-valved, 1 – several-seeded. Embryo pulley-shaped, placed in a cavity of the albumen opposite the hilum. — Plants somewhat succulent. Stems often branching. Sheaths of the leaves entire or open.

1. COMMELYNA, Dill. Day-flower.

Flowers irregular. Sepals mostly colored. Petals fugacious, two of them kidney-shaped and long-clawed, the other smaller. Stamens unequal, three of them fertile, the others with 4-lobed sterile anthers: filaments beardless. Capsule 1 – 3-celled, the cells 1 – 2-seeded, or one of them frequently empty. — Stems branching. Leaves flat, oblong, or lanceolate, on sheathing petioles; the floral ones cordate and spathe-like, folded, and enclosing the few-flowered peduncle. Flowers blue.

1. **C. communis,** L.? Stem smooth, filiform, and creeping; leaves short (1′ – 2′ long), ovate-lanceolate, obtuse; sheaths fringed at the throat; spathes nearly crescent-shaped, obtuse at the base, lateral and terminal; peduncles by pairs; one of them bearing 3 – 4 small fertile flowers, which are included in the spathe; the other long-exserted, filiform, 1-flowered; odd petal lanceolate, sessile; seeds reticulated. — Low grounds, Georgia to North Carolina. July – Sept. ①? — Stem 1° – 2° long.

2. **C. Virginica,** L. Pubescent; stem erect; sheaths hairy; leaves (4′ – 6′ long) oblong-lanceolate, acuminate, thin, rough above; spathe (when opened) round ovate, contracted at the base; sterile peduncle included; petals large, the odd one lanceolate; capsule 2 – 3-seeded. (C. erecta, *Ell.*) — Varies (C. angustifolia, *Michx.*) with the stems smooth, ascending; leaves narrowly lanceolate, rather rigid, and, like the sheath, nearly smooth; flowers smaller, seeds pulverulent. — Light or sandy soil, Florida, and northward. May – Sept. ♃ — Stem 1° – 2° high. The spathes contain a viscid secretion until the seeds mature.

3. **C. erecta,** L. Stem stout, erect; leaves (3′ – 5′ long) lanceolate or oblong, acute, very rough above, the sheaths fringed with brown hairs; spathes

crowded, short-stalked, hooded, narrowed at the base; sterile peduncle included; petals nearly alike, the odd one smaller; seeds transversely oblong. (C. hirtella, *Vahl.* C. longifolia, *Michx.*) — Shady swamps, Florida, and northward. Aug. and Sept. ♃ — Stem 1° – 1½° high.

2. TRADESCANTIA, L. Spiderwort.

Flowers regular. Sepals herbaceous. Petals similar, ovate, fugacious. Stamens all fertile, the filaments hairy: anthers kidney-shaped. Ovary 3-celled, with two ovules in each cell. Capsule 2 – 3-celled; the cells 1 – 2-seeded. — Perennial herbs, with narrow keeled leaves, both the floral ones and those of the stem. Flowers in umbel-like clusters, axillary and terminal, expanding in the morning. Fruiting pedicels recurved.

1. **T. Virginica,** L. Smooth, or villous with glandless hairs; leaves linear, broadest at the base, mostly purple-veined; clusters axillary and terminal, sessile, many-flowered; flowers closely packed in 2 rows in the bud, each with an ovate scarious bract at the base; petals blue, like the style and densely bearded filaments, twice as long as the lanceolate-ovate sepals. — Dry sandy soil, Florida, and northward. March – May. — Stems ½° – 2° high. Flowers 1′ in diameter.

2. **T. pilosa,** Lehm. Stem often branched, and, like the sheaths, villous or nearly smooth; leaves oblong, narrowed at the base, pubescent on both sides; clusters axillary and terminal, sessile, dense, many-flowered; the pedicels and oblong sepals villous with glandular hairs; seeds transversely oblong, pitted on the back; petals blue. — Light soil in the upper districts. May – July. — Stem 1° – 1½° high. Leaves 1′ – 1½′ wide. Flowers ¾′ in diameter.

3. **T. rosea,** Vent. Stem simple, slender, smooth; leaves linear-lanceolate, fringed on the margins; clusters solitary or by pairs, on long (3′ – 6′) terminal peduncles, few-flowered; petals bright rose-color, three times as long as the ovate-lanceolate sepals. — Light fertile soil, Georgia to North Carolina. June – Aug. — Stem 6′ – 8′ high. Flowers ½′ in diameter.

Order 156. MAYACACEÆ. (Mayaca Family.)

Creeping moss-like marsh herbs, with very numerous narrow and pellucid leaves, and solitary axillary flowers. Represented only by

1. MAYACA, Aublet.

Flowers regular, perfect. Sepals 3, lanceolate, herbaceous, persistent. Petals 3, obovate, deciduous or withering-persistent. Stamens 3, free, inserted on the base of the sepals, persistent: anthers erect, spoon-shaped, imperfectly 2-celled, emarginate at the apex, introrse. Ovary 1-celled. Ovules few, orthotropous, fixed to three parietal placentæ. Style single, terminal, persistent: stigma minutely 3-lobed. Capsule rugose, 3-valved; the valves bearing the placentæ in

the middle. Seeds globose, furrowed and pitted, pointed at the apex. Embryo minute at the apex of the albumen. — Stems branching, tender. Leaves alternate, linear, emarginate. Flowers white or purple.

1. **M. Michauxii,** Schott & Endl. Fruiting peduncles longer than the leaves, recurved; capsule few-seeded; flowers (3″ – 4″ wide) white or pale purple. (Syena fluviatilis, *Pursh.*) — Springy places, Florida to North Carolina. June and July. — Stems 2′ – 6′ long. Leaves 3″ – 4″ long.

Order 157. XYRIDACEÆ. (Yellow-eyed Grass Family.)

Perennial stemless marsh herbs, with fibrous roots, sword-shaped equitant leaves, and perfect irregular fugacious flowers, collected in a dense imbricate-bracted spike. Sepals 3; the two lateral ones glumaceous, keeled, persistent; the inner one hyaline, enfolding, in the bud, the petals and caducous stamens. Petals 3, rounded, distinct, or united by their long claws. Stamens 3, and inserted on the summit of the claws of the petals, or 6, and the alternate ones sterile, hypogynous, and commonly bearded with jointed hairs: anthers erect, 2-celled, extrorse. Ovary free, 1 – 3-celled. Style single, 3-parted. Capsule 3-valved, many-seeded. Seeds minute, orthotropous. Embryo minute, at the apex of the albumen. — Scape commonly twisted or spiral, 2-edged near the summit, with a spathe-like sheath at the base. Spikes mostly solitary.

1. XYRIS, L. Yellow-eyed Grass.

Petals distinct. Stamens 6, the alternate ones hypogynous, sterile, commonly bearded at the summit, and slightly cohering with the claws of the contiguous petals. Stigmas entire. Capsule 1-celled, 3-valved, the valves bearing the placentæ in the middle. Seeds very numerous, finely ribbed. — Spikes ovoid or oblong. Bracts coriaceous or somewhat crustaceous, rounded, closely imbricated, convex and discolored on the back; the lower ones empty. Keel of the lateral sepals mostly winged and variously lacerated. Flowers yellow.

§ 1. *Sheath of the scape longer than the leaves. Biennials?*

1. **X. brevifolia,** Michx. Scape nearly terete, smooth; leaves narrowly linear, smooth on the edges; spike globose, light brown, few-flowered; bracts soon lacerated at the apex; lateral sepals lanceolate, rigid, crenulate on the wingless keel; petals obovate, rounded; sterile filaments sparingly bearded. — Low sandy pine barrens, Florida to North Carolina. April and May. — Plant light brown. Scape 6′ – 12′ high, clustered. Leaves 1′ – 3′ long. Spike 2″ – 3″ long. Petals 2″ long.

2. **X. flabelliformis,** n. sp. Scape filiform, smooth, terete below, slightly compressed above; leaves very short, linear-lanceolate, smooth, spreading like a

fan, laterally curved; spikes oblong, mostly acute, few-flowered, angular; bracts light brown, entire; lateral sepals lanceolate, short-fringed on the wingless keel; petals obovate; sterile filaments often beardless. — Low pine barrens, near the coast, West Florida. April and May. — Scape 4′ – 12′ high. Leaves ½′ – 1′ long. Spikes 2″ – 4″ long. Petals 2″ long.

§ 2. *Sheath of the scape shorter than the leaves. Perennials.*

* *Sterile filaments bearded: sepals included.*

+ *Lateral sepals fringed on the keel.*

3. **X. ambigua,** Beyr. Scape rigid, finely furrowed, rough, 2-edged above, 1-angled below; leaves linear-lanceolate, rough on the edges; spike ovate-lanceolate or oblong, even, often acute, many-flowered; bracts light brown, oval, not crowded on the spike; lateral sepals lanceolate, tapering at each end, shining, narrowly winged; petals round obovate; seeds ovoid. — Open grassy pine barrens, Florida to North Carolina. July – Sept. — Scape 2° – 3° high, mostly solitary. Leaves 6′ – 12′ long. Spikes 9″ – 15″ long. Petals ½′ long.

4. **X. stricta,** n. sp. Scape flattened and broadly margined, rough-edged above, smooth and 1 – 2-angled below, slightly striate; leaves long, linear, smooth; spikes oblong or cylindrical, obtuse, many-flowered; bracts dark brown, orbicular, crowded on the spike; lateral sepals broadly winged above the middle, narrowed below; petals small, wedge-obovate; seeds ovoid. — Shallow ponds in the pine barrens, West Florida. July – Sept. — Scapes slender, clustered, 2° – 3° high. Leaves 1° – 1½° long. Spikes 9″ – 12″ long. Petals 2″ long.

5. **X. flexuosa,** Muhl. Somewhat bulbous; scape smooth, 2-edged above, nearly terete below; leaves linear, smooth; spikes globose, few-flowered; lateral sepals lanceolate, wingless. (X. bulbosa, *Kunth.*) — Swamps in the upper districts of Georgia, and northward. July – Sept. — Scape 6′ – 12′ high. Leaves 4′ – 8′ long. Spike 3″ – 5″ long.

+ + *Lateral sepals broadly winged, and variously toothed or fimbriate.*

6. **X. Elliottii.** Scape slender, flattened and 2-edged throughout, or 1-edged below, roughish and mostly spiral; leaves narrowly linear, sharp-edged, twisted; spike few-flowered, elliptical, obtuse; lateral sepals linear, the wing cut-toothed above the middle; petals obovate. (X. brevifolia, *Ell.* ex descr.) — Wet grassy pine barrens, Florida to South Carolina. July. — Scape 1° – 1½° high. Leaves 6′ – 9′ long. Petals 3″ long.

7. **X. difformis,** n. sp. Scapes clustered, slender, smooth, widely 2-edged above, terete or 1 – 2-angled below; leaves thin, linear-lanceolate, smooth; spikes many-flowered, ovate, acute, even, often 2 – 4-cleft; lateral sepals lanceolate, with the broadly winged keel incised-fimbriate; petals obovate; seeds elliptical, smooth. — Swamps near the coast, West Florida. July. — Scapes 1° – 1½° high. Leaves 9′ – 15′ long. Spikes 6″ – 9″ long. Petals small.

8. **X. serotina,** n. sp. Scapes clustered, twisted and mostly spiral, rough-angled and 2-edged above, striate; leaves linear-lanceolate, rigid, rough on the edges; spikes many-flowered, ovoid, obtuse, dark brown, even; bracts round-

obovate, closely imbricated; lateral sepals linear, narrowly winged above, fimbriate and at length incised; petals small, obovate; seeds ovoid, pulverulent. — Varies with shorter leaves (2′ – 3′), and smaller globose or ovate heads. — Pine-barren swamps, West Florida. Sept. and Oct. — Scapes 1° – 1½° high. Leaves 8′ – 12′ long. Spikes 6′ – 9′ long. Petals 2″ long.

9. **X. elata,** n. sp. Scapes elongated, slender, smooth, terete below, 2-edged above; leaves long, linear, smooth; spikes rugose, oblong or oval, often acute, many-flowered; scales dark brown; lateral sepals linear-lanceolate, sparingly toothed on the narrowly winged keel; petals wedge-obovate; seeds elliptical, smooth. — Sandy swamps near the coast, West Florida. July and Aug. — Scapes 3° – 4° high. Leaves 1½° – 2° high. Spikes ½′ – 1′ long. Petals 2″ long.

10. **X. Caroliniana,** Walt. Scapes several, smooth, rigid, 1 – 2-angled below, compressed and 2-edged above; leaves linear or linear-lanceolate, smooth; spikes rugose, oblong-ovate, obtuse, many-flowered; bracts light brown, thick, the margins thin and soon lacerate; lateral sepals linear-lanceolate, acute, the narrowly-winged keel cut-fringed above the middle; petals obovate; seeds ovoid. — Shallow ponds and swamps, Florida, and northward. July and Aug. — Scapes 1° – 2° high. Leaves 6′ – 15′ long. Spikes 6″ – 12″ long.

11. **X. iridifolia,** n. sp. Rigid, smooth and shining; scape stout, terete or 1-angled below, dilated and 2-edged above; leaves long, strap-shaped; spikes oval or oblong, obtuse, rugose, many-flowered; bracts dark brown, very thick, strongly convex; lateral sepals linear, membranaceous, the keel fimbriate and at length incised throughout; petals round-obovate; seeds lanceolate, angled, pulverulent. — Shallow ponds, Apalachicola, Florida. Aug. – Oct. — Scape 2° – 3° high, 2″ – 3″ in diameter. Leaves 2° – 2½° long, ½′ – 1′ wide. Spikes 1′ long. Petals 3″ long.

12. **X. platylepis,** n. sp. Scapes mostly twisted and spiral, angular below, 2-edged above, roughish; leaves linear and lanceolate, twisted, smooth; spikes large, oblong or cylindrical, obtuse, many-flowered; bracts pale brown or whitish, orbicular, thin, closely imbricated; lateral sepals linear, the keel narrowly winged, fimbriate toward the apex; petals small; seeds elliptical, smooth. (X. flexuosa, *Ell.*) — Low sandy places, Florida to South Carolina. July – Sept. — Scape 2° – 3° high. Leaves 9′ – 15′ long. Spikes ¾′ – 1½′ long.

** * Sterile filaments bearded: sepals exserted.*

13. **X. fimbriata,** Ell. Not bulbous; scape tall, furrowed, rough, 2-edged above; leaves long, strap-shaped, smooth; spikes ovate, acute, many-flowered; lateral sepals long-fimbriate above the middle; petals small. — Ponds and miry places, Florida, and northward. Sept. and Oct. — Scapes 3° – 4° high. Leaves 1½° – 2° long. Spikes 9″ – 12″ long. Petals 3″ long.

14. **X. torta,** Smith. Bulbous; scape nearly terete, 1-edged, smooth, mostly spiral; leaves linear, rigid, concave, with rounded edges, mostly spiral; spikes pale, lanceolate or cylindrical, acute; lateral sepals winged and fimbriate above the middle; petals large, round-obovate. — Sandy, often dry soil, Florida, and northward. July – Sept. — Scape 1½° – 2° high. Leaves few, 6′ – 12′ long,

tumid and dark brown at the base. Spikes $1' - 1\frac{1}{2}'$ long. Petals 9″ long, expanding at midday.

** * * Sterile filaments beardless: leaves filiform.*

15. **X. tenuifolia,** n. sp. Smooth; scape slender, terete or 1-angled; leaves filiform or bristle-like, compressed; spikes ovoid, few-flowered; lateral sepals lanceolate, the narrowly winged keel cut-serrate; petals obovate; seeds linear-oblong, smooth. — Open grassy pine-barren swamps, Florida to North Carolina. July – Sept. — Scapes clustered, $10' - 12'$ high. Leaves $4' - 6'$ long. Spikes $2'' - 4''$ long. Petals 3″ long.

16. **X. Baldwiniana,** R. & S. (X. juncea, *Baldw.*) "Root perennial; scape terete, sheathed at the base, $6' - 12'$ high; leaves $4' - 8'$ long, terete, hollow, acute; head oval; bracts nearly round; calyx about as long as the bracts, the keel slightly toothed, filaments naked." *Baldwin in Ell.* — Damp pine barrens, near St. Mary's, Georgia. May and June. (*)

Order 158. ERIOCAULONACEÆ. (Pipewort Family.)

Perennial chiefly stemless marsh herbs, with narrow tufted leaves, and minute monœcious or diœcious flowers, collected in a dense hairy chaffy-bracted head. — *Stam. Fl.* Sepals 2 – 3. Corolla tubular, bilabiate or 3-toothed, or sometimes wanting. Stamens 2 – 6: anthers introrse. — *Pist. Fl.* Sepals and petals 2 – 3. Ovary 2 – 3-celled, with a single orthotropous ovule in each cell. Style 2 – 3-parted. Capsule loculicidally 2 – 3-valved, 1 – 3-seeded. Embryo minute at the apex of the albumen. — Leaves concave and partly clasping at the base. Scape furrowed and commonly twisted, with a spathe-like sheath at the base. Exterior scales broader, empty, and involucrate. Flowers fringed with white club-shaped hairs. Corolla white.

Synopsis.

1. ERIOCAULON. Stamens 4. Anthers 2-celled. Style 2-parted. Corolla 2-lipped.
2. PÆPALANTHUS. Stamens 3. Anthers 2-celled. Style 3-parted, the lobes entire.
3. LACHNOCAULON. Stamens 3. Anthers 1-celled. Style 2 – 3-parted, the lobes entire, or 2-cleft.

1. ERIOCAULON, L. Pipewort.

Flowers monœcious, each in the axil of a scale-like bract. Sepals 2 – 3. Corolla of the staminate flowers tubular, 2-lipped or 3-lobed; of the pistillate flowers 2 – 3-petalous. Stamens 4 or 6: anthers 2-celled. Style 2 – 3-parted: stigmas 2 – 3. Capsule 2 – 3-celled, 1 – 3-seeded. — Scapes single or numerous, mostly from a short and villous rootstock. Lobes of the corolla furnished with a blackish gland on the inner face, commonly bearded with club-shaped hairs. — The following species are all tetrandrous, with a 2-parted style and a 3-celled capsule.

1. **E. decangulare,** L. Leaves mostly rigid, varying from lanceolate to linear-subulate, concave, obtuse; scapes commonly several from a thick and creeping rootstock, stout, smooth, 10 – 12-furrowed; head (2″ – 7″ in diameter) compact, hemispherical, at length globose; scales of the involucre numerous, small, oblong, acutish, closely imbricated, straw-colored, or light chestnut, passing into the linear-spatulate acuminate bearded bracts, which are longer than the flower. (E. gnaphalodes, *Ell.*, not of *Michx.*) — Boggy places, Florida, and northward. July – Sept. — Scapes 2° – 3° high. Leaves 4′ – 12′ long, 2″ – 6″ wide.

2. **E. gnaphalodes,** Michx. Leaves lanceolate-subulate, flat, very acute, rigid, or the immersed ones thin and pellucid; scapes few or single, slender, 9 – 11-furrowed; head hemispherical (4″ – 8″ wide); scales of the involucre few, oblong or roundish, very obtuse, turning lead-color; bracts shorter than the flower, spatulate, their broad and bearded summit obtuse or more or less mucronate-pointed, turning blackish. (E. compressum, *Lam.*) — Swamps and shallow ponds, Florida, and northward. April – June. —Scapes 1½° – 2° high. Leaves 2′ – 6′ long, concave at the base.

3. **E. Ravenelii,** n. sp. Smooth throughout; root fibrous; leaves linear or linear-lanceolate, very acute, flat, thin, and pellucid; scapes low and slender, clustered, slightly furrowed; heads small (1″ – 2″ in diameter), globose, few or many-flowered; scales of the involucre few, in one or two rows, oblong, very obtuse, whitish, pellucid, longer than the immature head, and, like the oblong obtuse or barely pointed dark brown scales, beardless; flowers naked, or with few hairs at the base, dark brown, shorter than the bracts; style occasionally simple; seeds minutely pubescent. — Wet places, St. John's (Berkeley) Parish, South Carolina, *H. W. Ravenel.* — Scapes weak, 1′ – 6′ high. Leaves 1′ – 2′ long.

2. PÆPALANTHUS, Martius.

Flowers monœcious. *Staminate Fl.* Sepals 3. Corolla tubular, 3-toothed. Stamens 3: anthers 2-celled. *Pistillate Fl.* Sepals and petals 3. Style 3-parted, the divisions entire: stigmas 3. Capsule 3-celled. — Habit of the preceding.

1. **P. flavidulus,** Kunth. Leaves short (1′ – 2′ long), subulate, smooth, or sparingly pubescent; scapes numerous, filiform, 5-furrowed, and like the sheaths hairy; heads hemispherical, yellowish-white; scales of the involucre oblong, acute, smooth and shining; flowers slender, pedicelled; sepals linear, acute; corolla of the staminate flowers funnel-shaped; of the pistillate flowers composed of 3 slender petals, cohering above the ovary; stamens and styles exserted. (Eriocaulon flavidulum, *Michx.*) — Low sandy pine barrens, Florida to North Carolina, and northward. April and May. — Scapes 6′ – 12′ high.

3. LACHNOCAULON, Kunth.

Flowers monœcious. *Staminate Fl.* Sepals 3, equal. Corolla none. Stamens 3, with the filaments united below into a club-shaped tube: anthers 1-celled. *Pistillate Fl.* Sepals 3, equal. Corolla none, or reduced to tufted hairs. Style club-shaped, 2 – 3-parted, the divisions entire or 2-cleft: stigmas 2 – 6. Cap-

sule 2–3-celled. — Habit of the two preceding. Bracts and sepals blackish, fringed with club-shaped hairs.

1. **L. Michauxii,** Kunth. Leaves linear (1′–2′ long), hairy, becoming smoothish; scapes slender, hairy, 4-furrowed (1° high); heads globose; bracts and sepals spatulate, obtuse, fringed with white hairs; divisions of the style 3, each 2-cleft. (Eriocaulon villosum, *Michx.*) — Low grassy pine barrens, Florida to North Carolina. May and June, growing in tufts. — Heads 2″ wide.

2. **L. glabrum,** Kornicke. Leaves linear, smooth (1′ long); scapes numerous, smooth, 5-furrowed (3′–5′ high); heads globose, becoming oblong, dark brown; bracts and sepals spatulate-obovate, obtuse, slightly fringed with short brownish hairs; divisions of the style 3, entire. — Sandy springy places, St. Andrews Bay, West Florida. Oct. — Scapes 30 or more in a cluster. Heads 3″ long, not unlike those of Eleocharis obtusa.

Order 159. CYPERACEÆ. (Sedge Family.)

Slender herbs, with simple solid mostly 3-angled stems (*culms*), and grass-like leaves, with closed sheaths. Flowers spiked, each in the axil of a single (rarely 2–4) scale-like bract (*scale*). Perianth composed of hypogynous scales or bristles, or none. Ovary 1-celled, with a single erect anatropous ovule, forming in fruit a lenticular or 3-angled achenium (*nut*), which is often crowned with the persistent jointed base of the style (*tubercle*). Stamens 1–12: anthers erect. Style 2–3-cleft or parted. Embryo minute at the base of the albumen.

Synopsis.

Tribe I. **CYPEREÆ.** — Flowers perfect: spikelets 1-many-flowered: scales one to each flower, imbricated in 2 rows: perianth bristly, or none.

* Perianth none: nut beakless.

1. CYPERUS. Spikelets few-many-flowered: inflorescence terminal.
2. KYLLINGIA. Spikelets 1-flowered: inflorescence terminal, capitate.

* * Perianth bristly: nut beaked.

3. DULICHIUM. Spikes lateral and terminal: spikelets many-flowered.

Tribe II. **LIPOCARPHEÆ.** — Flowers perfect: spikes many-flowered: scales 2–4 to each flower; the exterior ones imbricated in many rows: perianth none.

4. HEMICARPHA. Inner scale 1: involucre mostly 1-leaved, erect.
5. LIPOCARPHA. Inner scales 2: leaves of the involucre 2 or more, spreading.

Tribe III. **SCIRPEÆ.** — Flowers perfect: spikes commonly many-flowered: scales one to each flower, imbricated in several (rarely 2) rows, all fruitful, or the lowest empty: perianth bristly, hairy, or wanting.

* Perianth of 3 bristles, alternating with 3 stalked scales.

6. FUIRENA. Nut pointed: scales of the clustered axillary and terminal spikes awned.

* * Perianth bristly, occasionally wanting.

7. ELEOCHARIS. Nut tubercled: culms leafless, sheathed at the base, bearing one terminal spike.

8. SCIRPUS. Tubercle none: culms mostly leafy at the base or throughout: spikes commonly few or many: perianth of 3–6 bristles.
9. ERIOPHORUM. Perianth of numerous long and woolly hairs: otherwise like Scirpus.

* * * Perianth none: style tumid at the base.

+ Scales imbricated in several rows: spikes terete.

10. FIMBRISTYLIS. Style deciduous: stigmas 2: nut lenticular or globose.
11. TRICHELOSTYLIS. Style deciduous: stigmas 3: nut 3-angled.
12. ISOLEPIS. Style persistent at the base: stigmas 3: nut 3-angled.

+ + Scales imbricated in 2 rows: spike compressed.

13. ABILGAARDIA. Style 3-cleft, jointed to the 3-angled nut.

TRIBE IV. **RHYNCHOSPOREÆ.** — Flowers perfect or polygamous: spikelets commonly few-flowered: scales one to each flower, imbricated in few–several rows, the lower ones empty, the upper mostly sterile: perianth bristly, or none.

* Perianth bristly (occasionally wanting in Rhynchospora).

14. RHYNCHOSPORA. Style 2-cleft, dilated and persistent at the base: nut lenticular or globose.
15. CERATOSCHŒNUS. Style entire or minutely 2-cleft, the lower half persistent: nut flat.
16. CHÆTOSPORA. Style 3-cleft, deciduous: nut 3-angled: spikelets terminal.

* * Perianth none.

17. PSILOCARYA. Spikes terete, many-flowered, cymose: flowers perfect.
18. DICHROMENA. Spikes compressed, capitate: most of the flowers imperfect.
19. CLADIUM. Spikes few-flowered, only the uppermost flower perfect: nut globose.

TRIBE V. **SCLERIEÆ.** — Flowers monœcious: sterile spike many-flowered: scales one to each flower, imbricated in furrows: fertile spike 1-flowered, with two or more scales: perianth none.

20. SCLERIA. Style 3-cleft, deciduous. Nut bony, globose or 3-angled.

TRIBE VI. **CARICEÆ.** — Flowers monœcious, very rarely diœcious: sterile and fertile flowers on the same spike, or on separate spikes: scales one to each flower, imbricated in few–many rows: nut enclosed in a sac: perianth none.

21. CAREX. Bristles within the sac none. Spikes axillary and terminal.

1. CYPERUS, L.

Spikelets 2–many-flowered, commonly flat or compressed. Scales imbricated in two opposite rows, often decurrent on the jointed rachis, deciduous. Perianth none. Stamens 1–3. Style 2–3-cleft, deciduous. Nut lenticular or 3-angled. — Culms 3-angled (rarely terete), jointless, leafy or occasionally sheathed at the base. Spikelets numerous (rarely 1–2), disposed in single or umbellate heads or spikes, and surrounded with a leafy involucre. Rays sheathed.

§ 1. PYCREUS. *Style 2-cleft: nut lenticular: spikes more or less umbelled. Annuals: spikelets linear or linear-oblong, flat, many-* (10–40-) *flowered: rachis narrowly margined: scales compressed-keeled, 5-nerved.*

* *Spikelets clustered on the common rachis.*

1. **C. flavescens,** L. Umbel sessile or of 2–4 rays, shorter than the spikelets; spikelets 3–several in a cluster, oblong-linear, acute, spreading, 20–30-flowered; scales yellowish brown, ovate, obtuse, appressed; rachis margined; stamens 3; nut orbicular, black, smooth and shining; culms clustered, 4′–10′

high; leaves and 3-leaved involucre narrowly linear. (C. fasciculatus, *Ell.*?) — Low grounds, Florida, and northward. July and Aug.

2. **C. rivularis,** Kunth. Umbel of 3 – 4 rays, one or two of them longer than the spikelets; spikelets 3 – 6 in a cluster, oblong-linear, acute, many-flowered; scales pale straw-color, ovate, obtuse, appressed; rachis margined; stamens 2; nut round-obovate, transversely roughened, black and shining; culms 6′ – 12′ high, slender; leaves and 3-leaved involucre linear. — Marshy banks of streams, Georgia, Florida, and westward. Aug.

3. **C. diandrus,** Torr. Umbel of 2 – 5 short and unequal rays, the longer ones longer than the spikelets; spikelets lanceolate-oblong, acute, brownish or dark brown, spreading; scales ovate, obtuse, appressed, green on the keel; rachis margined; stamens 2; nut oblong-obovate, roughish, dull gray. — Wet places, North Carolina, and northward. Aug. — Culms 4′ – 10′ high. Involucre 3-leaved. This and the preceding are probably only diandrous forms of No. 1.

* * *Spikelets scattered on the common rachis (spiked).*

4. **C. Nuttallii,** Torr. Umbel sessile or of 3 – 6 rays, 1′ – 2′ long; spikelets numerous on the rays, spreading, linear-lanceolate, acute, light or yellowish brown, 12 – 20-flowered, the lower ones commonly compound; scales rigid, oblong-ovate, acute or mucronate, appressed; stamens 2; nut oblong-obovate, very obtuse, grayish and minutely pitted; culms clustered, 3-angled, 4′ – 15′ high; leaves and involucre narrowly linear. (C. flavescens, *Ell.* C. holosericeus, *Link.*?) — Salt or brackish soil, Florida, and northward. July – Sept. — Plant commonly yellowish and glossy throughout. Spikelets rarely crowded in a terminal head.

5. **C. flavicomus,** Michx. Umbel compound, many-rayed; spikelets very numerous, crowded, linear, acute, 12 – 30-flowered; scales loosely imbricated, yellowish, round-obovate, emarginate, with broad and scarious margins, at length spreading; rachis broadly margined; stamens 3; nut obovate, black, smooth and shining, barely shorter than the scale; culms thick, obtuse-angled, 1° – 3° high; leaves broadly linear, glaucous beneath, as long as the culm. — Low grounds and ditches, Georgia and South Carolina. May – Sept. — Involucre 3 – 5-leaved. Spikelets 6″ – 9″ long.

6. **C. microdontus,** Torr. Umbel of 4 – 8 rays, simple or somewhat compound; spikelets numerous, crowded, linear, acute, 15 – 25-flowered, pale brown; scales thin, ovate, acute, closely imbricated; rachis slightly margined; stamens 2; nut linear-oblong or somewhat club-shaped, short-pointed, grayish and minutely pitted; culms filiform, 3-angled, 6′ – 12′ high; leaves and elongated involucre very narrow. — Margins of ponds and streams, Florida to North Carolina. July – Sept. — Rays 1′ – 2′ long. Spikelets 4″ – 7″ long.

§ 2. CYPERUS Proper. *Style 3-cleft: nut 3-angled: joints of the rachis winged by the adnate decurrent scales, rarely wingless.*

1. Spicati. *Umbel simple or compound: spikelets few – many-flowered, distinct, spreading, forming loose or compact spikes at the summit of the rays: scales rigid, 7 – 11-nerved: joints of the rachis commonly conspicuously winged: stamens 3.*

* *Spikelets approximate or crowded on all sides of the common rachis, forming oblong or cylindrical spikes.*

7. **C. strigosus,** L. Umbel large, 4 – 8-rayed, simple or compound, much shorter than the involucre; involucels bristly, shorter than the dense oblong spikes; spikelets yellowish, linear, acute, compressed, 6 – 10-flowered; scales somewhat scattered on the very slender rachis, oblong-lanceolate, acute, closely appressed, much longer than the linear-oblong acute minutely dotted dull nut; culms (1° – 3° high) tumid at the base, as long as the broadly linear leaves. — Swamps and damp soil, Florida, and northward. July – Sept. — Rays 4′ – 6′ long. Spikelets ½′ – ¾′ long. Sheath of the rays bristle-pointed.

8. **C. stenolepis,** Torr. Umbel simple or compound, 6 – 9-rayed, shorter than the 3 – 6-leaved involucre; sheaths of the rays truncate; involucels bristly, shorter than the ovate compact spikes; spikelets yellowish, linear, acute, compressed, 5 – 8-flowered; scales linear-lanceolate, acute, involute, spreading, much longer than the oblong-linear acute dull and minutely pitted nut; culms smooth (2° – 3° high); leaves very rough on the margins, whitish beneath. — Swamps and wet places, Florida to North Carolina. Aug. and Sept. — Stem rather slender, longer than the leaves. Spikelets 6″ – 8″ long.

9. **C. Michauxianus,** Schultes. Umbel compound, 4 – 6-rayed; rays short with the sheaths pointed; spikes loose, mostly shorter than the leafy involucels; spikelets spreading or reflexed, linear-subulate, terete, 10 – 12-flowered; scales scattered on the short-jointed broadly-winged rachis, oblong, obtuse, faintly nerved, appressed; nut oblong, compressed-3-angled; culms slender, obtuse-angled; involucre 4 – 6-leaved. (C. speciosus, *Vahl* ?) — Swamps and ditches, Florida, and northward. Aug. and Sept. ⓘ — Culm 2° – 3° high. Spikelets 6″ – 8″ long, flexuous in fruit.

Var. ? **elongatus,** Torr. "Culm tall and slender; rays elongated; spikelets subulate, obtusely quadrangular; scales lanceolate, acute." *Torr.* — North Carolina, *Curtis.* — Rays 3′ – 5′ long. Spikelets crowded, 6 – 8-flowered.

10. **C. tetragonus,** Ell. Umbel simple or compound, of 6 – 12 slender rays; spikes cylindrical, loose; spikelets horizontal, short (2″ – 3″ long), oblong, 4-angled, 4 – 6-flowered; scales ovate, mucronate, appressed, 9 – 11-nerved, twice as long as the oblong dull nut; culms mostly slender, 1° – 2° high, acutely rough-angled at the summit, as long as the green rough-edged leaves; involucre many-leaved. — Dry sandy soil, along the coast, Florida to North Carolina. Aug. and Sept. ♃ — Spikes 1′ – 1½′ long, 5″ wide, those on the longer rays commonly compound. Rays 3′ – 5′ long. Joints of the rachis broadly winged.

11. **C. ligularis,** L. Umbel compound, of 4 – 6 rays; spikes ovate or oblong, dense; spikelets spreading (4″ long), linear-lanceolate, compressed-4-angled, 8 – 10-flowered, acute; scales oblong-ovate, acute, spreading, 9 – 11-nerved, thrice the length of the oblong-obovate pointed blackish nut; culms obtuse-angled, shorter than the (3° – 4° long) whitish long-tapering leaves. — Sandy shores at Key West. Oct. ♃ — Culm 2° – 3° high. Leaves rough-edged. Rays 2′ – 3′ long. Spikelets light brown. Joints of the rachis broadly winged.

* * *Spikelets compressed, somewhat 2-ranked, mostly few and scattered on the common rachis: perennials, with creeping tuber-bearing rootstocks: flowers mostly abortive.*

12. **C. repens,** Ell. Umbel mostly simple, erect, 5 – 6-rayed, shorter than the 3 – 5-leaved involucre; spikelets linear, spreading, 12 – 24-flowered, the lower ones often clustered; scales oblong, obtuse or short mucronate, compressed-keeled, thin-margined, spreading at the apex, yellowish brown; nut oblong, triquetrous, acute. — Sandy soil near the coast, Florida, and northward. July – Sept. — Culms 1° – 1½° high, acute-angled, longer than the erect smooth leaves. Rays 2′ – 4′ long. Spikelets 6″ – 8″ long. Whole plant yellowish.

13. **C. lutescens,** Torr. & Hook. Umbel simple, large, 5 – 7-rayed, shorter than the 3 – 5-leaved involucre; spikelets horizontal, flat, linear, 30 – 40-flowered, the lowest 2 – 3 in a cluster; scales light brown, oblong-lanceolate, acute, rounded on the back, slightly spreading at maturity; nut obovate-oblong; culms stout (2° – 3° high), acute-angled, shorter than the broadly linear leaves. — Key West. Nov. — Leaves 3″ – 6″ wide, very smooth. Rays 4′ – 8′ long. Spikelets 1′ long, 1½″ wide, serrate, the lower ones with a bristly involucel.

14. **C. rotundus,** L. Umbel simple or compound, 3 – 8-rayed, mostly longer than the 3-leaved involucre; spikes composed of 3 – 9 scattered linear flat 20 – 30-flowered spikelets; scales oblong, obtuse, appressed, 7-nerved on the green keel, the membranaceous sides dark chestnut; nut obovate; culms smooth, slender, longer than the broadly linear crowded spreading rough leaves. (C. Hydra, *Michx.*) — Sandy soil, along the coast, Florida to North Carolina. Aug. and Sept. — Culm 9′ – 18′ high. Rays slender, 2′ – 4′ long. Spikelets ½′ – 1′ long.

2. Sparsiflori. *Umbel compound: spikelets compressed, many-flowered, scattered in loose spikes at the filiform summit of the rays: scales thin, 5-nerved, separate: joints of the rachis slightly margined: stamens* 2.

15. **C. Iria,** L. Umbel 6 – 8-rayed, erect, shorter than the 3 – 4-leaved involucre; spikelets erect-spreading, oblong-linear, 12 – 24-flowered; scales spreading, nearly orbicular, obtuse or emarginate, short-mucronate, 5-nerved on the green keel, the thin whitish sides minutely pitted; nut oblong-obovate, abruptly pointed; style very short; culms (1° high) slender, acute-angled, longer than the smooth narrow leaves. — Santee Canal, South Carolina, *Ravenel.* Probably introduced from Eastern Asia.

3. Palmati. *Umbel compound or decompound, diffuse: spikelets* 2-*ranked, compressed, many-flowered,* 3 – 10 *in a cluster at the summit of the general and partial rays: scales closely imbricated,* 3 – 7-*nerved, decurrent on the rachis: stamens* 3.

* *Culms terete, knotted, leafless: involucre very short: nut oblong.*

16. **C. articulatus,** L. Umbel compound, many-rayed, spreading or recurved; involucre of three bract-like pungent leaves; spikelets long (½′ – 1½′ long), linear, spreading, 30 – 40-flowered; scales whitish, oblong, obtuse, 7-nerved

on the back, thrice the length of the linear-oblong dull nut; rhizoma creeping, bearing tuber-like buds; culms stout (3° – 5° high), tumid at the sheathed base. — Marshes near the coast, Florida to South Carolina. Aug. – Sept. ¼ — Flowers mostly abortive.

*** Culms 3-angled, knotless: involucre leafy: nut obovate.*

17. **C. Haspan,** L. Umbel many-rayed, decompound, spreading, the filiform rays mostly longer than the 2-leaved involucre; spikelets small (4″ – 5″ long), 3 – 5 in a cluster, linear, acute, 20 – 40-flowered; scales light reddish-brown, very small, oblong, mucronate, 3-nerved, free at the apex; nut white, round-obovate, granular-roughened; culms tender, sharply angled; leaves linear, smooth, shorter than the culms (1° – 1½°), often reduced to membranaceous sheaths. (C. gracilis, *Muhl.* C. leptos, *Schultes.*) — Ponds and ditches, Florida to North Carolina, and westward. July – Sept.

18. **C. dentatus,** Torr. Umbel compound, erect, 4 – 7-rayed, shorter than the 3 – 4-leaved involucre; spikelets 3 – 5 in a cluster (3″ – 7″ long), ovate-oblong, obtuse, flat, 12 – 30-flowered; scales ovate, acute, compressed, 7-nerved on the green keel, membranaceous on the reddish brown sides, spreading at the apex; nut minute, round-obovate, whitish; rhizoma creeping, bearing tubers; culms slender (1° high), obtuse-angled, longer than the rigid keeled leaves. — Sandy swamps and banks, South Carolina, *Torrey,* and northward. Sept. ¼ — Rays 1′ – 2′ long.

19. **C. Lecontii,** Torr. Umbel compound, erect, 6 – 12-rayed, shorter than the 3-leaved involucre; spikelets commonly three in a cluster, oblong or linear-oblong, obtuse, flat, 30 – 70-flowered (⅛′ – 1′ long); scales closely imbricated, ovate, obtuse, compressed, yellowish, faintly 7-nerved, appressed at the apex; nut minute, round-obovate, blackish; culms rigid, obtuse-angled, as long as the rigid leaves. — Low sandy places along the coast, East and West Florida. July – Sept. ¼ — Rhizoma creeping. Culms 6′ – 12′ high. Rays 2′ – 6′ long. Rachis with very short joints. Whole plant pale straw-color.

4. GLOMERATI. *Umbel simple or compound: spikelets many-flowered, compressed, numerous in a cluster, forming more or less dense heads at the summit of the common and partial rays: rachis wingless: stamen solitary.*

** Umbel compound: spikelets ovate or oblong, flat: scales 3-nerved, concave on the back, acute: nut minute, lanceolate or oblong.*

20. **C. virens,** Michx. Umbel spreading, compound, many-rayed; involucre 4 – 6-leaved, many times longer than the umbel; spikelets (4″ – 6″ long, and about 20 in a cluster) oblong, 30 – 40-flowered, pale green; scales oblong-lanceolate, straight; nut lanceolate, acute at each end; culms stout (2° – 4° high), rough-angled above; leaves broad, elongated, reticulated, rough on the margins. Miry places, Florida to North Carolina. July – Sept. ¼ — Plant pale green. Rays 3′ – 4′ long. Spikelets turning yellowish.

21. **C. vegetus,** Willd. Umbel often decompound, many-rayed, widely spreading; involucre 4-leaved, many times longer than the umbel; spikelets short (1½″ – 2″ long), ovate, 10 – 15-flowered, very numerous in the heads; scales

lanceolate, incurved, spreading at the apex; nut minute, linear-lanceolate, slender-pointed; culms slender (2° – 3° high), obtuse-angled or nearly terete; leaves narrow, rigid, rough on the margins near the summit. — Low pine barrens and margins of ponds, Florida to North Carolina. Sept. ↯ — Culms tumid at the base. Leaves of the involucre horizontal. Heads light brown.

22. **C. Drummondii,** Torr. Umbel compound, of 4 – 6 primary rays, and as many smaller ones, shorter than the 4-leaved involucre; spikelets (10 – 20 in a cluster) oblong or oblong-linear, 40 – 50-flowered; scales yellowish, ovate, straight, free at the apex; nut oblong, pointed, abruptly contracted at the base, minutely wrinkled; culms (6′ – 15′ high) obtuse-angled, very rough, longer than the narrow leaves. — Sandy swamps, Middle Florida, and westward. September. ①

* * *Umbel simple or sessile: spikelets lanceolate or linear, compressed: scales* 8 – 10-*nerved, tapering into a long spreading or recurved point: nut obovate-oblong: low tufted annuals.*

23. **C. inflexus,** Muhl. Umbel of 1 – 2 short rays or sessile, much shorter than the 2 – 3-leaved involucre; spikelets very numerous in the clusters (green), oblong-linear (2″ long), 10 – 20-flowered; scales thin, oblong, 8-nerved, gradually pointed; culms weak, acute-angled (2′ – 6′ high), as long as the smooth narrowly linear leaves. — Low sandy places, Apalachicola, Florida, (apparently introduced,) to North Carolina, and northward. July – Sept. — Sheaths of the leaves green.

24. **C. confertus,** Swartz. Umbel of 1 – 2 short rays or sessile, shorter than the 2-leaved involucre; spikelets 8 – 20 in a cluster, lanceolate, 12 – 20-flowered, reddish brown (3″ long); scales rigid, oblong, 10-nerved, abruptly pointed; culms acute-angled (1′ – 4′ high), as long as the linear smooth leaves; sheaths dark brown. — South Florida. November. Spikelets less crowded than in the preceding.

5. CAPITATI. *Umbel simple or sessile: spikelets inserted on all sides of the common rachis, forming clusters or heads: joints of the rachis mostly winged: scales rigid,* 5 – 11-*nerved: stamens* 3.

* *Spikelets few in loose clusters.*

25. **C. filiformis,** Swartz. Clusters sessile; spikelets 6 – 12, erect, terete, subulate, 6 – 12-flowered; scales scattered, appressed, oblong, mucronate, finely nerved; rachis very slender, flexuous; nut oblong, acute; culms tufted, filiform, acute-angled, longer than the bristle-like leaves; involucre 2-leaved, the lower one elongated and erect. — Key West. November. ↯ — Culms 4′ – 10′ high, tumid at the base. Spikelets 4″ – 6″ long.

26. **C. compressus,** L. Umbel simple or compound, often sessile, shorter than the 4 – 6-leaved involucre; spikelets spreading, linear, flat, 12 – 30-flowered; scales ovate, acuminate, closely imbricated, keeled, nut broadly obovate, acute-angled, black and shining; culms obtuse-angled, longer than the pale green leaves. — Cultivated grounds, Florida to North Carolina, and westward. July – Sept. ① — Culms 4′ – 12′ high. Umbel spreading, sometimes reduced to few

spikelets or a single one. Spikelets somewhat glaucous, 4″ – 6″ long, serrated by the projecting points of the scales.

27. **C. trachynotus,** Torr. Umbel simple, of 3 – 5 short erect rays; involucre elongated, 3-leaved; spikelets several in a cluster, lanceolate, compressed, 12 – 20-flowered; scales whitish, ovate, acuminate, loosely imbricated in fruit, hispid-serrulate on the keel, the broad margins embracing the pear-shaped acutely angled nut; culm flattened on one side, rounded on the other, as long as the slender keeled leaves. — Dry sandy soil, South Florida. May – Nov. — Culms 9′ – 15′ high, straw-color, like the leaves. Spikelets ½′ long.

* * *Spikelets numerous in compact globular or oblong heads.*
+ *Perennials: culms tumid or tuberous at the base.*

28. **C. fuligineus,** n. sp. Head solitary, globose, shorter than the 2-leaved involucre; spikes lanceolate, acute, compressed, 8 – 12-flowered; scales (black) ovate, obtuse or emarginate, mucronate; nut oblong-obovate; culms filiform, obtuse-angled, thrice the length of the narrow rigid leaves. — Key West. November. — Culms ½° – 1° high. Sheaths of the leaves blackish. Head 5″ in diameter. Scales 9-nerved.

29. **C. filiculmis,** Vahl. Umbel of 1 – 2 spreading rays or none; involucre 3 – 4-leaved; spikelets 15 – 20, in a dense globose head, linear-lanceolate, 6 – 10-flowered; joints of the rachis barely margined; scales (greenish) ovate, obtuse or emarginate, short-mucronate, loosely imbricated; nut obovate; culms (10′ – 15′ high), slender, wiry, longer than the linear leaves. (C. mariscoides, *Ell.*) — Dry sandy soil, Florida, and northward. July – Sept. — Heads ½′ in diameter.

30. **C. Grayii,** Torr. Umbel of 4 – 6 erect rays, shorter than the 3 – 4-leaved involucre; spikelets 6 – 9 in a rather loose head, linear or linear-lanceolate, 5 – 7-flowered; joints of the rachis winged; scales (brownish) closely imbricated (spreading in fruit), ovate or oblong, obtuse; nut obovate; culms (8′ – 12′ high) filiform, wiry, longer than the bristle-shaped leaves. — Dry sandy pine barrens, Florida, and northward. Aug. and Sept.

31. **C. ovularis,** Torr. Umbel 3 – 6-rayed, rarely wanting; heads small, globose or oblong; spikelets (1½″ – 2″ long) angular, obtuse, 2 – 4-flowered; scales ovate-oblong, obtuse, mucronate, closely imbricated; nut oblong; culms filiform, smooth; rather acute-angled, much longer than the rigid filiform leaves. (Mariscus ovularis, *Vahl.* M. cylindricus, *Ell.*) — Wet or dry soil, Florida, and northward. Aug. and Sept. — Culms ½° – 2° high. Heads 2″ – 3″ in diameter.

32. **C. retrofractus,** Torr. Umbel of about 8 slender (2′ – 6′ long) rays, longer than the involucre; heads obovate; spikelets subulate, reflexed, terete; scales 4 – 5, the two lower ones ovate and empty, the upper lanceolate, acute; nut linear-oblong: culm tall (2° – 4°), downy and roughish, like the broadly linear leaves. (Mariscus retrofractus, *Vahl.*) — Barren sandy soil, Florida, and northward. July – Sept. — Leaves much shorter than the culm.

+ + *Annuals: roots fibrous.*

33. **C. Baldwinii,** Torr. Umbel 6 – 12-rayed, shorter than the involucre; heads globose or oblong; spikelets linear, somewhat compressed, acute, 6 – 12-

flowered; scales (greenish or yellowish) oblong, obtuse, mucronate, closely imbricated; nut oblong; culms (1° – 2° high) obtuse-angled, longer than the linear leaves. (Mariscus echinatus, *Ell.*) — Cultivated ground, Florida to North Carolina, and westward. July – Sept. — Spikelets 3″ – 6″ long.

34. **C. divergens,** Kunth. Umbel none; head globose, shorter than the 4-leaved involucre; spikelets ovate-lanceolate, flat, acute, 5 – 7-flowered; scales ovate, mucronate, compressed-keeled, 7-nerved, the scarious sides broadly decurrent; style deeply 2 – 3-parted; stamens 2 – 3; nut (immature) oblong, lenticular or 3-angled; culms low (2′ – 3′), tufted, obtuse-angled, shorter than the smooth keeled leaves. — Damp cultivated grounds, Quincy, Middle Florida. August. — Head 3″ – 4″ in diameter, composed of 3 – 4 compact clusters; spikelets 1″ long, white.

§ 3. PAPYRUS. *Style 3-cleft: nut 3-angled: scales of the rachis at length free and deciduous. Inflorescence as in No.* 7.

35. **C. erythrorhizos,** Muhl. Umbel 3 – 12-rayed, simple or compound, shorter than the 3 – 10-leaved involucre; spikelets very numerous, narrow-linear, compressed, spreading, 12 – 50-flowered; scales minute, oblong-ovate, obtuse, greenish and faintly nerved on the back, yellowish and glossy on the sides; scales of the rachis lanceolate, acute; nut oval, compressed-3-angled, smooth and shining; culms obtuse-angled; leaves rough on the margins, pale beneath; involucels leafy, longer than the spikes. (C. tenuiflorus, *Ell.*) — Ponds and ditches, Florida, and northward. July – Sept. ① — Culms $\frac{1}{2}$° – 4° high. Leaves 1″ – 14″ wide. Spikelets 2″ – 8″ long.

2. KYLLINGIA, L.

Spikelets compressed, mostly 1-flowered. Scales commonly 4, imbricated in two rows, the two lower ones small and empty, the third perfect, the fourth imperfect. Perianth none. Stamens 1 – 3. Style elongated, 2-cleft. Nut lenticular. — Culms jointless, 3-angled, leafy at the base. Involucre 3 – 5-leaved. Spikelets collected in single or clustered sessile heads. Plants odorous.

1. **K. pumila,** Michx. Heads (green) mostly 3, globose or ovate; spikelets 1-flowered, ovate-lanceolate, acute at each end; scales 3, the lowest minute, the middle one ovate, compressed, mucronate, mostly serrulate on the keel, enclosing the upper one; nut obovate; stamens 2; culms weak, acute-angled; leaves and 3 – 4-leaved involucre linear. — Wet places, Florida to North Carolina. July – Sept. ① — Culms tufted, 4′ – 10′ high.

2. **K. sesquiflora,** Torr. Heads (white) 1 – 3, ovate or oblong; spikelets ovate-oblong, acute, 1-flowered, or imperfectly 2-flowered; scales 4 – 5, the two lower ones minute, the third and fourth alike, ovate, acute, smooth, the fifth enclosed in the fourth; stamens 2; nut obovate; culms erect, obtuse-angled; leaves and 3 – 5-leaved involucre broadly linear. — Low exposed places and along roads, Middle Florida. Aug. – Sept. ↳ — Culms 4′ – 12′ high. Plant pale green, pleasant-scented.

3. **K. monocephala,** L. "Heads single, globose, compact; spikelets 1-flowered, monandrous, ovate, acuminate, the 2 superior scales striate, nearly smooth on the sides, serrulate-ciliate on the keel, the 2 inferior minute; nut somewhat orbicular; involucre 3-leaved, one of the leaves erect, the others horizontal." *Torr.* — Low moist places near Darien and Sunbury, Georgia. — Rhizoma creeping Culms 1° high. Head greenish, generally inclined. Leaves abruptly pointed.

3. DULICHIUM, Richard.

Spikelets linear, compressed, many-flowered. Scales imbricated in 2 rows, decurrent on the joints of the rachis. Perianth composed of 6 – 9 downwardly hispid rigid bristles. Stamens 3. Style 2-cleft. Nut lanceolate, compressed, long-beaked. — Perennial. Culms terete, jointed, leafy. Leaves numerous, 3-ranked, linear or lanceolate, short and spreading. Spikes numerous, solitary in the upper axils, simple or the lower compound. Spikelets 8 – 14, 2-ranked, spreading, 6 – 10-flowered. Scales lanceolate, many-nerved, closely imbricated. Bristles nearly twice as long as the compressed or concave nut.

1. **D. spathaceum,** Richard. — Ponds and ditches, Florida, and northward. Aug. – Sept. — Culms 1° – 2° high. Leaves 1′ – 3′ long. Spikelets 6″ – 12″ long. Peduncles of the lower spikes longer than the sheaths.

4. HEMICARPHA, Nees.

Spikes many-flowered, ovate, one or few in a terminal (apparently lateral) cluster. Scales imbricated in many rows, ovate or obovate. Inner scale single, behind the flower, very thin, minute. Perianth none. Stamens 1 – 2. Style 2-cleft. — Small tufted annuals with naked culms, narrow radical leaves, and an erect mostly 1-leaved involucre.

1. **H. subsquarrosa,** Nees. Culms erect, nearly terete (2′ – 4′ high); leaf solitary, linear-subulate, concave, smooth, shorter than the culm; involucre 1 – 2-leaved, the lower one erect and continuous with the culm, much longer than the spikes, the other short and reflexed or wanting; spikes 2 (rarely one), seemingly lateral; scales brown, ovate-oblong, reticulated, the stout and greenish midrib prolonged into a thick and obtuse erect point; stamens 2; style deeply 2-parted, smooth; nut oblong-obovate, minutely pitted in lines. — Low sandy places, Florida, and northward. Aug. – Sept. — Sheaths brown. Spikes 2″ – 3″ long.

5. LIPOCARPHA, R. Brown.

Spikes many-flowered, terete. Scales spatulate, imbricated in many rows, deciduous, the lowest empty. Interior scales 2, parallel to the exterior ones, membranaceous, enclosing the flower and nut. Stamens 1 – 2. Style 2 – 3-cleft. Nut compressed, 3-angled. — Culms jointless, leafy at the base. Spikes in a terminal cluster. Involucre leafy.

1. **L. maculata,** Torr. Annual; culms clustered, terete; leaves much shorter than the culm, linear, concave, smooth; involucre 2 – 6-leaved, spreading

or recurved; spikes small, ovate, 3 – 9 in a cluster; scales spotted; scales of the perianth very thin, the nerves at length free and bristle-like below; nut oblong, contracted into a short neck. (Kyllingia maculata, *Michx.*) — Springy or miry places, Florida to North Carolina. July – Sept. — Culms 4′ – 8′ high. Spikes 1″ – 2″ long, green.

6. FUIRENA, Rottb.

Spikes many-flowered. Scales imbricated in many rows, awned at the apex. Perianth consisting of three petal-like stalked scales alternating with as many bristles. Stamens 3. Style 3-cleft. Nut 3-angled, raised on a stalk, and pointed with the persistent base of the style. — Culms terete, jointed. Spikes single or clustered, lateral and terminal. Scales hairy.

1. **F. scirpoidea,** Vahl. Rhizoma thick and creeping; culms slender; leaves reduced to pointed sheaths, smooth; spikes 1 – 3, terminal, ovate, supported by a small bract-like involucre; scales obovate, 9-nerved, pointed with a short erect awn; stalks of the oval barely pointed petal-like scales longer than the hispid bristles. — Wet sandy places, near the coast, Florida and Georgia. May Sept. ♃ — Culms 1° high.

2. **F. squarrosa,** Michx. Culms clustered, smooth, or pubescent near the summit; leaves flat, linear or linear-lanceolate, the margins, like the lower sheaths, hairy; spikes oblong, in lateral and terminal clusters; scales oblong-obovate, with the long pale awn recurved; petal-like scales ovate, acute; bristles as long as the stalk of the obovate nut. — Var. HISPIDA. (F. hispida, *Ell.*) Leaves, sheaths, and upper portion of the culm bristly-hairy; petal-like scales acuminate; bristles nearly as long as the nut. — Swamps, Florida, and northward. July – Sept. ♃ — Culms ½° – 2° high. Leaves 2′ – 5′ long. Terminal cluster occasionally compound.

7. ELEOCHARIS, R. Brown. SPIKE-RUSH.

Spikes many- (rarely 2 – 4-) flowered. Scales imbricated on all sides of the rachis, or somewhat 2-ranked, the lowest usually empty, bract-like, and persistent. Perianth of 3 – 8 bearded bristles, occasionally wanting. Stamens 1 – 3. Style 2 – 3-cleft. Nut compressed, biconvex, or 3-angled, crowned with the persistent jointed base of the style (tubercled). — Commonly perennials, with creeping rootstocks. Culms jointless, leafless, sheathed at the base, bearing at the apex a single spike.

§ 1. ELEOCHARIS PROPER. *Spikes many-flowered: scales imbricated in several rows.*

* *Spikes cylindrical, scarcely thicker than the soft cellular culms: nut biconvex, pitted or wrinkled in longitudinal lines.*

+ *Scales rounded, thick and faintly nerved: style 3-cleft: bristles 6, sparingly bearded or smoothish, as long as the nut.* (Limnochloa, Nees.)

1. **E. equisetoides,** Torr. Culms stout, terete, knotted by cross partitions, roughish; scales pale, round-ovate, obtuse or the upper acute, scarious on

the margins; bristles hispid; nut pale brown, obscurely wrinkled, shining, crowned with a sessile conical-beaked acute tubercle. (Scirpus equisetoides, *Ell.*) — Ponds, Florida, and northward. July – Sept. ♃ — Culms 1° – 2° high, 3″ in diameter. Sheaths brown. Spikes 1′ long.

2. **E. quadrangulata,** R. Br. Culms unequally 4-sided, with the angles acute; scales pale, roundish, very obtuse, scarious on the margins; bristles slender, bearded, unequal; nut broadly obovate, finely pitted, dull white; tubercle ovate or conical, free around the base, much shorter than the nut. (Scirpus quadrangulatus, *Michx.*) — Ponds and ditches, Florida, and northward. July – Sept. ♃ — Culm 2° – 3° high, 1″ – 2″ in diameter. Sheaths purplish. Spikes 1′ long.

3. **E. cellulosa,** Torr. Culms obscurely 3-angled below, terete above; scales pale brown, round-obovate, white and scarious on the margins; bristles rather rigid, nearly or quite smooth; nut oblong-obovate, conspicuously pitted, narrowed into the conical (at length flattened) tubercle. — Marshes, Apalachicola, Florida, and westward, near the coast. Aug. and Sept. ♃ — Rootstocks creeping, slender. Culms 1° – 2° high, 1½″ in diameter. Upper sheath elongated. Spikes ½′ – 1′ long, spirally twisted.

+– +– *Scales oblong, nerved on the back, thin on the margins: style* 2 – 3*-cleft: bristles* 7*, strongly bearded, longer than the nut.*

4. **E. Robbinsii,** Oakes. Culms erect, rather slender, acutely 3-angled, intermixed with hair-like abortive ones; spike 6 – 8-flowered, acute; scales greenish, obtuse, rather distant on the flattened rachis, closely imbricated; style 2-cleft; bristles unequal, as long as the nut and tubercle; nut (1″ long) deeply pitted in lines, scarcely shorter than the subulate tubercle. — Shallow ponds, near Quincy, Florida, and in New England, *Oakes, Olney;* but not as yet detected at any intermediate point. Aug. — Rhizoma filiform. Culms 6′ – 12′ high. Spikes ½′ long.

5. **E. elongata,** n. sp. Culms floating, slender, terete, mingled with hair-like abortive ones; spike 12 – 20-flowered, acute; scales rather distant on the compressed rachis, oblong-ovate, obtuse, green on the back, dark brown on the sides; style 3-parted; bristles rather longer than the obovate biconvex or somewhat 3-angled faintly pitted nut; tubercle minute. — In still water, near Apalachicola. July. ♃ — Rootstocks filiform. Culms 2° – 3° long, all but the summit immersed. Spikes 6″ – 9″ long. Nut ½″ long.

* * *Spikes thicker than the culm: style* 3*-cleft: nut* 3*-angled.*

+– *Bristles* 6*, as long as the nut and tubercle: nut longitudinally furrowed and pitted.*

6. **E. tuberculosa,** R. Br. Culms somewhat compressed, tough and wiry; spikes pale, ovate or oblong, acute; scales oblong, rigid, 1-nerved; nut obovate, as large as the ovate compressed 3-angled tubercle; bristles rigid, hispid. — Varies with larger spikes and pubescent bristles. (Scirpus tuberculosus, *Michx.*) — Wet places, chiefly along the coast, Florida, and northward. March – Sept. ♃ — Culms 6′ – 12′ high. Spikes 3″ – 4″ long (6″ – 8″ in the var.). Nut shining.

7. **E. simplex,** Torr. Culms unequally 3-sided, acute-angled; spikes short, ovate, acute; scales ovate-oblong, whitish, with brownish sides; nut obovate, flat on the inner face, twice as long as the conical-beaked compressed acute tubercle; bristles rigid. (E. tortilis, *Schult.* Scirpus simplex, *Ell.*) — Miry places along streams, Florida to North Carolina. May – Sept. ♃ — Culms 1° – 1½° high, very slender, twisted when dry. Spikes 2″ – 3″ long, angular, few-flowered.

8. **E. prolifera,** Torr. (Cyp. p. 315, not of p. 442). Culms filiform, diffuse or prostrate, compressed; spikes ovate-lanceolate, acute, proliferous or rooting; scales whitish, thin, oval, obtuse; nut obovate, compressed-3-angled; tubercle half as long as the nut, conical, 3-angled, free at the base; bristles stout. (E. vivipara, *Link.*) — Marshy banks of ponds and streams, Florida to North Carolina. May – Sept. ♃ — Culms 10′ – 20′ long, tough and wiry. Spikes 2″ – 4″ long, very rarely fruiting.

+ + *Bristles* 4 – 6, *longer than the smooth nut.*

9. **E. intermedia,** Torr. Culms bristle-form, diffuse, furrowed; spikes oblong-ovate, acute, 8 – 10-flowered; scales ovate-lanceolate, rather acute, thin, brown on the sides; nut (yellowish) obovate, narrowed at the base, flat on the inner face, beaked with the subulate tubercle; bristles 6, stout, as long as the nut and tubercle. — Wet places and in shallow streams, Georgia, and northward. — Culms ½° long. Spikes 2″ – 3″ long. Nut minutely striate.

10. **E. albida,** Torr. Culms terete, spongy; spikes pale, oval or oblong, obtuse, many-flowered; scales rigid, oval, obtuse, white or brownish; nut broadly obovate, whitish, flat on the inner face, smooth and shining; tubercle minute, free at the base; bristles 6, reddish, longer than the nut. — Wet sandy places along the coast, Florida to South Carolina, and westward. May – Sept. ♃ — Rhizoma filiform, creeping. Culms 2′ – 6′ high. Spikes 2″ – 3″ long.

11. **E. rostellata,** Torr. Culms compressed, furrowed, wiry; spikes ovate-lanceolate, acute, 12 – 20-flowered; scales rigid, oval, obtuse, light brown; nut obovate, flat on the inner face, tapering into the conical-beaked tubercle; bristles 4 – 6, stout, twice as long as the nut. — South Carolina, and northward. — Culms 1° – 1½° high. Spikes 3″ – 4″ long.

+ + + *Bristles* 2 – 6, *not exceeding the nut, often wanting.*

12. **E. melanocarpa,** Torr. Culms compressed, furrowed, tough and wiry; spikes ovate or ovate-oblong, obtuse, many-flowered; scales thin, ovate, obtuse, white on the broad margins; style 2 – 3-cleft; nut black, obconical, 3-angled or biconvex, truncate at the apex, and capped with the triangular minutely pointed white tubercle; bristles 3, as long as the nut, sometimes wanting. — Pine-barren swamps, Florida, and northward. June – Sept. ♃ — Culms 1° – 1½° high. Spikes 4″ – 5″ long, 2″ thick, occasionally proliferous.

13. **E. arenicola,** Torr. Rhizoma long and creeping; culms slender, slightly compressed, striate, tough and wiry; spikes ovate, or at length oblong or cylindrical, obtuse, many-flowered; scales thin, oblong, obtuse, brown at the summit, white on the margins; nut (yellowish) obovate, compressed-3-angled,

contracted into a neck at the base of the short conical-beaked tubercle; bristles 4 – 6, reddish, not longer than the nut. — Sandy sea-shore, West Florida to South Carolina. May – Sept. ↳ — Rhizoma and sheaths black. Culms 6′ – 15′ high. Spikes 3″ – 6″ long, occasionally 2 – 3-cleft. Nut minutely pitted.

14. **E. tricostata,** Torr. Rhizoma stout, creeping; culms nearly terete, striate, wiry; spikes cylindrical-oblong, acutish, many-flowered; scales thin, oblong, green on the keel, dark brown on the sides, white on the margins; nut obovate, with strong and rib-like angles, contracted into the minute conical tubercle; bristles none. — Low pine barrens, Florida, and northward. May – Sept. ↳ — Rhizoma and sheaths pale. Culms 1° – 1½° high. Spikes 2″ – 4″ long. Nut very small, minutely wrinkled.

15. **E. tenuis,** Schultes. Culms filiform, acutely 4-angled, the sheaths purple; spikes elliptical, obtuse or acute, many-flowered; scales oblong, obtuse, green on the keel, dark brown on the sides, white on the margins; nut obovate, 3-angled, transversely wrinkled and pitted, crowned with the broad depressed short-pointed tubercle; bristles 2 – 3, much shorter than the nut, fugacious. — Wet places, North Carolina, and northward. — Culms 8′ – 12′ high, almost bristle-form. Spikes 3″ – 4″ long. Nut pale brown.

16. **E. microcarpa,** Torr. Culms bristle or hair-like, 4-angled; spikes ovate or oblong, obtuse, 10 – many-flowered, often proliferous; scales oblong, obtuse or acutish, membranaceous, brownish, with white margins; nut very minute, white, obovate, rounded at the apex, and crowned with the depressed minutely pointed tubercle; bristles 3 – 6, rarely as long as the nut, occasionally wanting.

Var.? **filiculmis,** Torr. Spikes many-flowered, dark brown; nut obovate-oblong, narrowed at the apex, and crowned with the conical 3-angled tubercle; bristles rigid, rather longer than the nut. — Low sandy places, Florida to North Carolina, and (the var.) northward, chiefly near the coast. May – Sept. — Culms tufted, 3′ – 9′ high. Spikes 1″ – 2″ long. Lowest scale larger and persistent. Nut strongly 3-angled.

* * * *Spikes thicker than the culm: style* 2 – 3*-cleft: nut lenticular.*

+ *Culms* 4*-angled, bristle-like.*

17. **E. bicolor,** n. sp. Culms erect or procumbent, 4-angled or 4-furrowed; spikes ovate, obtuse, 8 – 12-flowered; scales thin, loosely imbricated, ovate, obtuse, white on the keel and margins, the sides dark brown; style 2 – 3-cleft; nut very minute, white, obovate, lenticular, smooth, twice as long as the three fugacious bristles; tubercle broadly conical, compressed, one third as long as the nut. — Sandy margins of ponds, near Quincy, Florida. Aug. ① — Culms tufted, 1′ – 6′ long, when growing in water finely knotted. Spikes 1½″ long.

18. **E. multiflora,** n. sp. Culms tufted, erect, 4-furrowed, the sheaths dark brown; spikes ovate or oblong, obtuse, at length very many- (70 – 100-) flowered; scales oval, very obtuse, thin, brown on the sides, white on the margins; stamens 2; style 2-cleft; nut very minute, pear-shaped, compressed, almost truncate at the apex, tipped with the somewhat peltate tubercle; bristles

none. — Margins of ponds and streams, West Florida. June – Aug. ⓘ — Culms 3′ – 5′ high. Spikes 1″ – 2″ long, the lower scales deciduous as new flowers are developed. Nut black, smooth and shining.

+ + Culms terete or compressed, more or less spongy.

19. **E. capitata,** R. Brown. Rhizoma slender, creeping; culms compressed; spikes short, ovate, 12 – 16-flowered; scales membranaceous, whitish, oblong, obtuse, deciduous; nut black and shining, broadly obovate, biconvex, tipped with the short conical tubercle; bristles 6, as long as the nut. — Springy or miry places, Florida, Georgia, and westward. June – Sept. ♃ — Culms 1′ – 4′ high. Spikes 1″ – 2″ long. Scales often brown when young. Nut very small.

20. **E. olivacea,** Torr. Culms compressed, furrowed, diffuse; spikes ovate, acutish, many-flowered; scales ovate, obtuse, thin, purplish on the sides, green on the keel, the margins white; nut obovate, dull, dark olive; tubercle distinct, conical-beaked; bristles 6 – 8, about half as long as the nut. — Wet sandy places, North Carolina, and northward. Aug. and Sept. — Culms 2′ – 5′ long. Spikes 3″ long, 20 – 30-flowered.

21. **E. palustris,** R. Brown. Rhizoma creeping; culms slender, terete, striate; spikes oblong-lanceolate, mostly acute, many-flowered; scales oblong, membranaceous, brown on the sides, at length whitish, the upper ones acute; nut dull yellow, obovate, tumid, minutely dotted; tubercle short, triangular-ovate, compressed; bristles 4, slender, commonly as long as the nut. (Scirpus palustris, *L.*) — Marshes and wet places, Florida, and northward. June – Sept. ♃ — Rhizoma black. Culms 1° – 3° long. Spikes 3″ – 5″ long.

22. **E. obtusa,** Schultes. Culms tufted, terete, thick and spongy; spikes ovate or oblong, obtuse, many-flowered; scales thin, oblong, obtuse, commonly brown on the sides, green on the keel, with broad and white margins; style 2 – 3-cleft; nut (light brown) obovate, lenticular, smooth and shining, scarcely wider than the short compressed acute tubercle; bristles 6, rigid, twice the length of the nut. (Scirpus capitatus, *Ell.*) — Muddy margins of ponds and streams, Florida, and northward. Common. June – Sept. — Culms 6′ – 18′ high. Spikes 2″ – 4″ long.

§ 2. CHÆTOCYPERUS. *Spikes few-flowered, compressed: scales membranaceous, imbricated in* 2 – 3 *rows: style* 3*-cleft. Culms capillary.*

23. **E. acicularis,** R. Br. Culms (2′ – 12′ high) angled; spikes ovate, 5 – 6-flowered, acute; scales oblong, with reddish sides; nut oblong, white, nearly terete, longitudinally ribbed and pitted, pointed with the conical or depressed tubercle; bristles 3 – 4, shorter than the nut, sometimes wanting. (Scirpus trichodes, *Muhl.*) — Margins of ponds, Florida, and northward. June – Sept.

24. **E. pygmæa,** Torr. Culms short (1′ – 2′ high), grooved on one side; spikes ovate, 3 – 6-flowered; scales whitish, ovate; nut ovate, pale, prominently 3-angled, smooth and shining, narrowed above into the minute tubercle; bristles 6, longer than the nut, sometimes wanting. (Scirpus capillaceus, *Ell.*) — Muddy

or sandy banks near the coast, Florida, and northward. April – July. — Rhizoma very slender, bearing minute tuber-like buds. Spikes 1″ – 2″ long.

25. **E. Baldwinii,** Torr. Culms (4′ – 6′ long) grooved, diffuse, wiry; spikes oblong, flat, 3 – 5-flowered, proliferous and rooting; scales 4 – 6, 2-ranked, lanceolate, obtuse, finely nerved, the lower ones longer; nut smooth, oblong, strongly 3-angled, crowned with the conical 3-angled sessile tubercle; bristles 4 – 6, unequal, the longest as long as the nut. — Swamps, Florida and Georgia. June – Sept. ♃ — Sheaths light brown. Spikes 2″ long.

8. SCIRPUS, L. Bulrush.

Spikes terete, single, or oftener in clusters or umbels, which are subtended by a 1 – many-leaved involucre. Scales imbricated in several rows. Nut obtuse, or pointed by the persistent jointless base of the style. Tubercle none. — Culms jointed and leafy, or leafy or sheathed only at the base. Otherwise like Eleocharis. — All perennial except No. 2.

§ 1. *Culms jointless: leaves or sheaths radical.*

* *Spike solitary, terminal.*

1. **S. cæspitosus,** L. Culms tufted (6′ – 10′ high), terete, wiry; sheaths numerous, rigid, imbricated, the uppermost ending in a short leaf; spike 3 – 8-flowered; involucre 2-leaved, as long as the spike, pointed; nut oblong, compressed-3-angled, abruptly pointed, half as long as the smooth capillary bristles. — High mountains of North Carolina, and northward. July. — Rhizoma thick and creeping. Spike 1″ – 2″ long.

* * *Spikes 2 – many, apparently lateral: the 1-leaved involucre erect and continuous with the culm.*

+ *Spikes in sessile clusters.*

2. **S. debilis,** Pursh. Culms terete, slender, commonly leafless; spikes 2 – 5, oblong-ovate or cylindrical; involucre elongated; scales round-ovate, obtuse mucronate; style 2 – 3-cleft; nut broadly obovate, plano-convex, smooth, shorter than the 4 – 6 strongly hispid bristles. — Borders of ponds and streams, South Carolina, and northward. ① — Culms ½° – 1½° high. Spikes 3″ – 5″ long.

3. **S. pungens,** Vahl. Culms stout, acutely 3-angled, two of the sides concave, leafy at the base; leaves channelled, sharply keeled; involucre slender (3′ – 4′ long); spikes 3 – 6, light brown, oblong; scales membranaceous, oval, 2-cleft, mucronate-awned, slightly ciliate; anthers slender-pointed; style 2-cleft; nut round-obovate, plano-convex or lenticular, as long as the 3 – 5 hispid bristles. (S. Americanus, *Pers.*) — Sandy marshes along the coast, West Florida, and northward. June – Sept. — Culm 2° – 3° high. Leaves 2 – 3, mostly shorter than the culm. Spikes 4″ – 6″ long.

4. **S. Olneyi,** Gray. Culms stout, with three-winged angles, and three deeply channelled sides, leafless, or the sheaths ending in short pointed leaves; involucre short (½′ – 1′ long) rigid; spikes 7 – 13, short, ovate, dark brown; scales

smooth, orbicular, 2-cleft, mucronate; anthers obtuse; style 2-cleft; nut round-obovate, plano-convex, as long as the 6 hispid bristles. — Brackish marshes, West Florida, and northward. June – Sept. — Culms 2° – 4° high. Leaves 2′ – 4′ long. Spikes 2″ long.

+– +– Spikes umbelled.

5. **S. lacustris,** L. Culm tall (3° – 8° high), terete, leafless, or the radical sheaths leafy-pointed; involucre 1-leaved, pungent, shorter than the decompound umbel; spikes ovate or oblong, mostly clustered; scales ovate, emarginate, rough-awned, ciliate on the margins, pubescent on the back and green keel; style 2-cleft; nut obovate, pointed, plano-convex, shorter than the 3 – 6 strongly hispid bristles. (S. validus, *Vahl.*) — Varies, with the broader keeled and fimbriate bristles rather shorter than the round-obovate nut. — Fresh or brackish marshes and ponds, Florida, and northward. July – Sept.

6. **S. leptolepis.** Culms 3-angled, leafy at the base (2° – 3° high); leaves long, sharply keeled, triangular-compressed near the obtuse curved apex, the immersed ones flat and pellucid; involucre slender (7′ long), leaf-like, with shorter ones at the divisions of the compound umbel; spikes single, oblong or cylindrical, many-flowered, acute; scales light brown, lanceolate-oblong, acute, smooth, membranaceous, mucronate, and, like the three obtuse anthers, finely spotted; style 3-parted; nut whitish, 3-angled, oblong-obovate, long-pointed, shorter than the 5 slender and minutely denticulate bristles. (S. maritimus, var. cylindricus, *Torr.?*) — Lakes and ponds, Middle Florida, and westward. *Dr. Hale.* September.

§ 2. *Culms jointed, leafy throughout: umbel terminal: involucre 2 – several-leaved, spreading.*

** Bristles hispid downward.*

7. **S. maritimus,** L. Culm sharply 3-angled, rough above; leaves longer than the culm, keeled; umbel simple, 1 – 3-rayed, bearing single or 2 – 3 spikes in a cluster, or the spikes all clustered and sessile; involucre 2 – 4-leaved, much longer than the umbel; spikes large, ovate or oblong-ovate, dull brown; scales thin, ovate, pubescent, tipped with a spreading awn; nut round-obovate, plano-convex or lenticular, smooth and shining, twice the length of the 4 weak bristles. — Saline marshes, Florida, and northward. Aug. and Sept. — Culms 2° – 3° high. Spikes 6″ – 10″ long, 4″ in diameter.

8. **S. polyphyllus,** Vahl. Culm obtuse-angled, smooth; leaves long, rough on the margins; umbel decompound, spreading; spikes small, 3 – 8 in a cluster, ovate, yellowish-brown; scales ovate, mucronate, keeled; bristles 6, slender, hispid near the summit, mostly tortuous, 2 – 3 times as long as the pale compressed-3-angled pointed nut. (S. exaltatus, *Pursh.*) — Shady swamps, North Carolina, and northward. July. — Culm 2° – 5° high. Spikes 1″ long.

9. **S. divaricatus,** Ell. Culm round-angled, many-jointed; leaves flat, broadly linear; umbel large, widely spreading or drooping, decompound, longer than the 3-leaved involucre; spikes all single, oblong-linear, scattered; scales ovate, obtuse, 3-nerved, brown on the sides; bristles hair-like, rather roughened than hispid, crisped at the summit, longer than the obovate pointed equal-sided

acute-angled nut. — Muddy banks of the Chipola River, and of Flat Creek, near Aspalaga, Florida, to South Carolina; not common. Aug. — Culm 2° – 4° high, often proliferous at the joints. Umbel 6′ – 12′ long. Spikes 2″ – 3″ long.

* * *Bristles* 6, *capillary, smooth, crisped and entangled.* (Trichophorum.)

10. **S. Eriophorum,** Michx. Culm nearly terete, with the joints remote; leaves linear, elongated, keeled; umbel terminal, decompound, spreading or recurved, shorter than the 3 – 5-leaved involucre; spikes single or clustered, ovate; scales thin, lanceolate, obtuse; bristles many times longer than the oblong compressed-3-angled beak-pointed nut, at length exserted, and covering the spike with woolly down. (Trichophorum cyperinum, *Pers.*) — Swamps and low grounds, Florida, and northward. July – Sept. — Culm 2° – 4° high.

11. **S. lineatus,** Michx. Culm 3-angled; leaves flat, linear-lanceolate; umbels lateral and terminal, longer than the 1 – 3-leaved involucre; spikes all single, cylindrical; scales rigid, keeled, mucronate; bristles barely exserted; nut as in the preceding. Swamps, Georgia, and northward. June – Aug. — Culm 2° – 3° high. Spikelets 3″ – 4″ long.

9. ERIOPHORUM, L. Cotton-Grass.

Spikes many-flowered. Scales imbricated in many rows. Perianth composed of numerous (rarely 6) smooth and flat hairs, much longer than the scale, and forming a woolly or silky tuft. Stamens commonly 3. Style 3-cleft, deciduous. Nut 3-angled or lenticular. — Perennials, with leafy culms, in our species, and clustered or umbelled spikes.

1. **E. Virginicum,** L. Culm nearly terete, rigid; leaves narrowly linear, elongated; spikes densely clustered, nearly sessile, erect; involucre 2 – 3-leaved; wool reddish, thrice the length of the brownish scales; nut compressed-3-angled, acute. — Bogs and swamps, Florida, and northward. June – Aug. — Culm 2° – 3° high. Leaves 10′ – 18′ long.

2. **E. polystachyon,** L. Culm terete; leaves broadly linear, 3-angled at the summit; spikes umbelled, distinct, on slender at length nodding peduncles; involucre 2-leaved, shorter than the umbel; wool white, many times longer than the dark brown scales; nut obtuse. — Meadows and bogs in the upper districts, Georgia, and northward. Aug. and Sept. — Culm 1° – 2° high. Leaves 3′ – 6′ long.

10. FIMBRISTYLIS, Vahl.

Spikes many-flowered. Scales imbricated in several rows. Perianth none. Stamens 1 – 3. Style 2-cleft, commonly flat and fringed on the margins, tumid at the base, deciduous. Nut lenticular. — Culms jointless, leafy at the base. Involucre 1 – several-leaved. Spikes terminal, umbellate or clustered.

* *Spikes umbelled.*

1. **F. spadicea,** Vahl. Perennial; culms clustered, nearly terete, rigid (2° – 3° high); leaves long, linear or filiform, concave, rough on the margins; umbel simple or compound, erect; involucre 2 – 3-leaved; spikes ovate or ob-

long, dark brown; scales smooth, rigid, rounded; nut obovate, acute, slightly furrowed and pitted. (Scirpus castaneus, *Michx.* S. ferrugineus, *Ell.*) — Salt marshes, Florida, and northward. Aug. – Oct.

Var. **puberula.** (Scirpus puberulus, *Michx.*) Culms single, slender (1° – 2° high); leaves filiform, involute, and, like the spikes, densely pubescent and somewhat hoary; nut round-obovate, obtuse. — Low pine barrens.

2. **F. laxa,** Vahl. Annual; culms (6′ – 18′ high) slender, and, like the narrowly linear leaves, often pubescent; umbel mostly simple; involucre 2 – 4-leaved; spikes oblong-ovate; scales orbicular, mucronate; nut obovate, strongly furrowed and pitted, warty on the edges. (Scirpus sulcatus, *Ell.*) — Low grounds, in fields and waste places, Florida to North Carolina. Aug. and Sept. — Umbel occasionally reduced to a single spike.

* * *Spikes clustered, sessile.*

3. **F. congesta,** Torr. Annual; culms densely tufted (3′ – 6′ high), bristle-like, like the rough leaves; spikes 5 – 10 in a terminal cluster, oblong or cylindrical, pale, or at length yellowish brown; involucre 4-leaved, erect-spreading, longer than the culm; scales lanceolate, tapering into a slender spreading point; nut oblong-obovate, crossed with faint lines. — Banks of the Apalachicola River, Florida, and westward. Aug. and Sept. — Spikes 2″ – 3″ long.

11. TRICHELOSTYLIS, Lestib.

Spikes terete, many-flowered. Scales imbricated in few (4 – 8) rows. Perianth none. Style 3-cleft, tumid at the base, deciduous. Nut 3-angled. — Culms jointless, leafy at the base. Spikes umbelled.

1. **T. autumnalis.** Culms slender, flat, 2-edged, 6′ – 12′ high, tufted; involucre 2-leaved, mostly shorter than the simple compound or decompound umbel; spikes linear-lanceolate; scales ovate-lanceolate, mucronate, imbricated in 4 rows; stamens 2; nut white, obovate, obtuse, often warty. (Scirpus autumnalis, *L.*) — Low grounds, Florida to Mississippi, and northward, very common. July – Oct. ①

12. ISOLEPIS, R. Brown.

Spikes few – many-flowered. Scales imbricated in few – several rows. Perianth none. Style 3-cleft, the tumid base persistent at the apex of the 3-angled nut. — All annuals (in our species), with filiform or bristle-form culms and leaves. Spikes umbelled or clustered. Leaves radical.

* *Spikes umbelled.* (*Scales pubescent.*)

1. **I. capillaris,** R. & S. Culm (4′ – 6′ high) smooth, furrowed, and, like the rough-edged leaves, bristle-like; spikes 3 – 4, in a simple umbel, oblong, 6 – 8-flowered; scales oblong, obtuse, strongly keeled, brown on the sides, imbricated in 4 rows; nut obovate, obtuse, nearly equal-sided, transversely wrinkled; stamens 2. (Scirpus capillaris, *L.*) — Moist sandy places, Florida, and northward. June – Sept. — Sheaths of the leaves bearded at the throat. Involucre 2 – 3-leaved, scarcely longer than the umbel.

2. **I. ciliatifolia,** Torr. Culms tufted, filiform, angled (6′–12′ high); leaves bristle-form, hispid on the edges, the sheaths bearded at the throat; umbel compound; spikes several (1″–2″ long), 6–12-flowered, linear-oblong; scales oval, strongly keeled, brown on the sides; nut obovate, very obtuse, nearly equal-sided, obscurely wrinkled. (Scirpus ciliatifolius, *Ell.*) — Dry sandy places, Florida to North Carolina. Aug. and Sept.

3. **I. coarctata,** Torr. Culms (1° high) terete, filiform; leaves bristle-form, smooth, with the sheaths bearded; umbel compound, contracted; spikes (3″ long) linear-oblong, 10–15-flowered; scales ovate, acutish, imbricated in 4 rows; nut flat on the inner face, obtuse-angled in front, obscurely dotted. (Scirpus coarctatus, *Ell.*) — Dry sandy soil, Georgia and South Carolina, near the coast. Sept. and Oct. — Rays of the umbel ½′ long.

** * Spikes clustered in a terminal head.*

4. **I. stenophylla,** Torr. Culms (2′–4′ high) densely tufted, 3-angled, and, with the bristle-form leaves and involucre, bristly-ciliate; involucre much longer than the head, 3–4-leaved, dilated and ciliate at the base; spikes 4–6, oblong-linear, 8–10-flowered; scales lance-ovate, slender-pointed, hispid on the 3-nerved keel; nut (bluish) obovate, obtuse, wrinkled. (Scirpus stenophyllus, *Ell.*) — Dry sandy soil, Florida to North Carolina. Aug. and Sept.

5. **I. Warei,** Torr. Culms filiform (1°–1½° high), smooth, 3-angled, much longer than the bristle-form hispid leaves; sheaths bearded at the throat with long silky hairs; leaves of the involucre rigid, twice as long as the head, orbicular and cut-fringed at the base; spikes 8–10 in a head, ovate, many-flowered; scales ovate, mucronate, many-nerved; nut obovate, obtusely angled, obscurely wrinkled. — Dry sands near the coast, West Florida. Sept. — Heads ½′ in diameter.

13. ABILGAARDIA, Vahl.

Spikes many-flowered. Scales imbricated in 2 or (by the twisting of the rachis) 3 rows, keeled, decurrent on the rachis, deciduous. Perianth none. Stamens 1–3. Style 3-cleft, tumid at the base, deciduous. Nut 3-angled. — Culms jointless, leafy at the base. Spikes solitary, clustered or umbelled.

1. **A. monostachya,** Vahl. Culms filiform, tufted (6′–10′ high); leaves shorter than the culm, filiform, obtuse, concave; spikes solitary (rarely by pairs), ovate, acute, compressed, 8–12-flowered, much longer than the bract-like mucronate 1-leaved involucre; scales broadly ovate, acute or mucronate, compressed-keeled, with broad and white margins; stamens 3; nut somewhat pear-shaped, 3-angled, warty, yellowish-white. — South Florida, *Dr. Blodgett.*

14. RHYNCHOSPORA, Vahl. Beak-Rush.

Spikes 1–several-flowered. Scales imbricated in few rows, the lowest empty, the upper usually bearing imperfect flowers. Perianth of 3–6 (rarely 12–20) hispid or plumose bristles, occasionally wanting. Stamens mostly 3. Style 2-cleft. Nut lenticular or globose, crowned with the dilated and persistent base

of the style (tubercled). Perennials, with jointed and leafy culms. Spikes small, disposed in axillary and terminal corymbs or clusters.

§ 1. ERIOCHÆTE. *Bristles of the perianth* 6, *plumose.*

1. **R. plumosa,** Ell. Culms (6′ – 12′ high) and leaves filiform; spikes few, in about three small clusters at the summit of the culm; nut nearly globular, strongly wrinkled, pointed with the short ovate smooth tubercle; bristles rather longer than the nut, plumose throughout or nearly to the summit. — Low pine barrens, Florida to North Carolina. June and July.

Var. **intermedia.** Culms taller (1° – 2° high); leaves narrowly linear; clusters 4 – 6, forming an interrupted spike at the summit of the culm; nut obovate, pointed with the conical-beaked pubescent tubercle; bristles plumose only at the base, or below the middle. — Sandy pine barrens, often dry places, Florida.

2. **R. semiplumosa,** Gray. Culms erect, rigid (1° – 2° high); leaves narrowly linear; spikes oblong-ovate, dark brown, crowded in a terminal head, or rarely in a remote axillary one; nut globose-obovate, faintly wrinkled, pointed with the short broadly conical smooth tubercle; bristles exceeding the tubercle, plumose below the middle. — Dry sandy ridges, near the coast, West Florida. July and Aug. — The leaves, like those of the preceding species, have a joint-like contraction near the middle.

3. **R. oligantha,** Gray. Culms (6′ – 12′ high) and smooth leaves bristle-like, reclining; corymb terminal, of 3 – 6 large (4″ long) ovate-lanceolate whitish stalked spikes; nut oval, lenticular, faintly wrinkled; tubercle dilated at the base, conical, flat; bristles longer or shorter than the nut, plumose below the middle. — Low open pine barrens, Florida to North Carolina. June and July.

§ 2. RHYNCHOSPORA Proper. *Bristles of the perianth* 3 – 20, *smooth, scabrous, or hispid.*

* *Nut transversely wrinkled or uneven: bristles denticulate or hispid upward.*

+ *Bristles shorter than the nut.*

4. **R. rariflora,** Ell. Culms and leaves bristle-form; corymbs 2 – 3, remote, spreading; spikes few and scattered, ovate; nut broadly obovate, biconvex, strongly wrinkled, twice as long as the 6 fragile bristles; tubercle flat, broadly conical, ½ as long as the nut. — Low grassy pine barrens, Florida to North Carolina. June and July. — Culms 1° – 1½° long, commonly reclining. Spikes pedicelled.

5. **R. Torreyana,** Gray. Culms erect, slender, nearly terete; leaves narrowly linear or bristle-form; corymbs 1 – 3, remote, erect; nut obovate, flat, about twice as long as the 6 bristles; tubercle compressed-conical, dilated at the base, ⅓ the length of the nut. — Wet ground, South Carolina, and northward. July. — Culm 1° – 3° high. Corymbs many-flowered and somewhat spreading, or few-flowered and capitate.

6. **R. cymosa,** Nutt. Culms (2° – 3° high) 3-angled; leaves narrowly linear; corymbs mostly 3, distant, open or contracted; spikes ovate, clustered, light brown; scales mucronate; nut broadly obovate, biconvex, faintly wrinkled, twice as long as the 3 – 6 bristles; tubercle broadly conical, compressed, ¼ as

long as the nut. — Var. GLOBULARIS. Smaller (6′ – 15′ high); corymbs reduced to few globose-ovate dark brown clustered spikes; nuts smaller, and deeper furrowed. — Low ground, Florida, and northward. June and July.

7. **R. compressa,** Carey. Culms stout, 3-angled (2° – 3° high); leaves linear, rigid; corymbs 3 – 5, remote, spreading; spikes ovate, numerous, in dense bracted clusters; scales acute; nut obovate; the flat or somewhat depressed sides strongly wrinkled and pitted, twice as long as the 6 bristles; tubercle conical-beaked, with the dilated base wider than the nut. — Margins of pine-barren ponds, West Florida. June and July. — Radical leaves numerous, 1° long.

+– +– *Bristles equalling or longer than the nut (in No. 9 variable).*

8. **R. stenophylla,** n. sp. Culms and leaves setaceous; corymbs 1 – 2, small, erect; spikes 5 – 7, distinct, lanceolate-oblong; nut obovate, biconvex, strongly wrinkled, twice as long as the conical-beaked tubercle; bristles 6, slender, nearly as long as the nut and tubercle. — Low grassy pine barrens, Apalachicola. June and July. — Culms tufted, 1° long.

9. **R. microcarpa,** Baldw. Culms (2° high) erect, slender, nearly terete; leaves narrowly linear; corymbs 4 – 6, slender, spreading, compound; spikes small, round-ovate, scattered; nut round-obovate, lenticular, strongly wrinkled, tipped with the very short and broad tubercle; bristles 5 – 6, as long as the nut. — Varies with the spikes clustered, and the 3 bristles not half the length of the nut. — Margins of ponds, Florida to North Carolina. July and Aug.

10. **R. inexpansa,** Vahl. Culms nearly terete, slender (2° – 3° high); leaves narrowly linear; corymbs 4 – 5, narrow, remote, compound, drooping; spikes scattered, lanceolate; nut lanceolate-oblong, compressed, twice as long as the conical-beaked tubercle; bristles 6, very slender, twice the length of the nut. — Swamps and banks of streams, Georgia, and northward. July and Aug.

11. **R. decurrens,** n. sp. Culms (2° – 3° high) erect, nearly terete, very slender and bending near the top; leaves linear, elongated, flat and somewhat glaucous; corymbs 5 – 6, remote, compound, the bristle-like branches spreading or drooping; spikes (1″ long) ovate, scattered, pedicelled; nut obovate, lenticular, slightly wrinkled and pitted; tubercle compressed, crescent-shaped, with the edges decurrent, ⅓ the length of the nut; bristles 6, as long as the nut. — Marshy banks of lakes and rivers, West Florida. June and July.

12. **R. patula,** Gray. Culms 3-angled (2° – 3° high), slender above; leaves linear; corymbs 3 – 5, remote, compound, widely spreading; spikes scattered, ovate, on slender stalks; nut round-obovate, lenticular; tubercle flat, conical, half the length of the nut, ciliate on the edges; bristles 6, rather longer than the nut. — Varies with the spikes lanceolate, the narrower nut contracted at the base, and the bristles twice the length of the nut. — Banks of pine-barren streams, Florida and Georgia. June and July.

13. **R. Elliottii,** Dietr. Culm (2° – 3° high) 3-angled; leaves linear (1″ – 2″ wide); corymbs 3 – 5, compound, the lower ones remote; spikes small, ovate, crowded; nut obovate, flattened, strongly wrinkled; tubercle broadly conical, flat, ¼ as long as the nut; bristles 6, strongly hispid, as long as the nut and

tubercle. (R. multiflora, *Gray*. Scirpus schœnoides, *Ell.*) — Margins of ponds in the pine barrens, Georgia, Florida, and westward. June and July. — Nuts $\frac{1}{2}''$ long, several on a spike.

14. **R. caduca,** Ell. Culms stout (3° – 4° high), 3-angled; leaves broadly linear (3″ – 4″ wide); corymbs 4 – 6, compound, remote, the branches and short pedicels erect; spikes very numerous, approximate, ovate; scales caducous; nuts 4 – 8 on the spike, obovate, biconvex, faintly wrinkled; tubercle flat, conical, ciliate, $\frac{1}{3}$ as long as the nut; bristles 6, slender twice as long as the nut. — Swamps and wet banks of streams, Florida to North Carolina. Aug. — Spikes 2″ long. Nut twice as large as in No. 13.

15. **R. miliacea,** Gray. Culms tall (3° – 4° high), 3-angled; leaves flat (3″ – 4″ wide); corymbs 6 – 8, distant, compound; the branches and slender pedicels spreading horizontally; spikes ovate; scales caducous; nuts 4 – 8 on the spike, round-obovate, biconvex; tubercle compressed, conical; bristles 6, slender, as long as the nut and tubercle. (R. sparsa, *Ell.*) — Bogs and deep miry places, Florida to North Carolina. June and July. — The nuts of this and the preceding species remain on the spike after the scales have fallen away.

16. **R. punctata,** Ell. Culms (1° – 2° high) slender, 3-angled; leaves short, linear-lanceolate; corymbs 3 – 4, cluster-like, the lateral ones simple, distant, and long-peduncled; spikes ovate; nut obovate, compressed, with transverse pitted furrows, rather shorter than the 6 slightly hispid bristles; tubercle conical, compressed, shorter than the nut. — Near Savannah and St. Mary's, Georgia, *Elliott.* May and June.

17. **R. Grayii,** Kunth. Culm solitary, 3-angled (2° – 3° high); leaves linear, rigid, shining; corymbs 3 – 4, distant, capitate; spikes few, large, ovate; nut round-obovate, tumid, slightly pitted, dull; tubercle short-conical, dilated at the base; bristles 6, as long as the nut and tubercle; stamens 3 – 6. (R. distans, *Ell.* R. Elliottii, *Gray.*) — Dry pine barrens, Florida to North Carolina. June and July.

* * *Nut smooth and even: bristles hispid upward.*

18. **R. megalocarpa,** Gray. Culms stout (2° – 3° high), 3-angled; leaves rigid, linear, shining; corymbs 4 – 6, distant, spreading or somewhat contracted; spikes (3″ long) ovate, single; nut large (2″ long), orbicular-obovate, biconvex, light brown, turning blackish; tubercle short-conical from a spreading base; bristles 6 – 10, commonly shorter than the nut; stamens 12. (R. dodecandra, *Baldw.*) — Dry sands along the coast of West and East Florida, and Wilmington, North Carolina. May – Aug.

19. **R. Baldwinii,** Gray. Culms (2° – 3° high) sharply 3-angled, rough; leaves short, glaucous, smooth, very acute; corymbs 1 – 3, contracted or nearly capitate; spikes ovate, dark chestnut; nut ovate, lenticular, twice as long as the flat conical tubercle; bristles 12 – 14, longer than the nut; stamens 6. — Wet pine barrens, Georgia and Florida. June and July.

20. **R. ciliata,** Vahl. Culms blunt-angled (1° – 2° high); leaves short, glaucous, linear-lanceolate, obtuse, fringed on the margins; corymbs mostly solitary, capitate; spikes light brown, ovate; nut oval, lenticular, minutely roughened;

tubercle flat, conical; bristles 6, ⅓ the length of the nut; stamens 3. — Wet pine barrens, Florida to North Carolina. June – Aug. — Leaves 2′ – 4′ long. Lateral corymb (when present) remote.

21. **R. fascicularis,** Nutt. Culms obscurely 3-angled, commonly slender, (2° – 3° high); leaves pale, narrowly linear; corymbs 2 – 3, distant, capitate, or sometimes compound; bracts conspicuous; spikes light brown, oblong-ovate, densely clustered; scales mucronate-awned; nut oval or orbicular, lenticular, dark brown, usually pale in the middle and on the prominent edges; tubercle white, broadly or narrowly conical, obtuse, compressed, ⅓ – ½ the length of the nut; bristles 4 – 6, varying from one half to nearly twice the length of the nut. — Low pine barrens, Florida to North Carolina. June and July.

Var. **distans.** (R. distans, *Nutt.*) Every way smaller; culms (6′ – 18′ high) erect; corymbs capitate, by pairs at the summit of the culm, and often with a third rather distant lateral one; spikes ovate; bristles 6, as long as the nut, rarely twice as long. — Low pine barrens, Florida to North Carolina. Aug. and Sept.

Var. **trichoides.** Culms (6′ – 12′ long) prostrate, and, like the leaves, bristle-form; corymb solitary, capitate; spikes few; nut orbicular, three times as long as the 3 – 6 bristles. — Open pine barrens, West Florida.

22. **R. filifolia,** Gray. Culms (1° – 2° high) filiform, erect; leaves setaceous; corymbs 2 – 4, distant, capitate; spikes densely clustered, lanceolate; nut minute, obovate, lenticular, smooth and shining, twice as long as the compressed triangular-ovate ciliate tubercle; bristles 6, rigid, nearly as long as the nut and tubercle. — Margins of pine-barren ponds, Florida to North Carolina. July and Aug. — Culm nearly terete. Spikes brown. Nut pale, with thickened edges.

23. **R. pallida,** M. A. Curtis. Culms rigid, acutely 3-angled, glaucous-green, rough above; leaves erect, ciliate-serrulate; corymb terminal, capitate, compact; spikes very pale-ferruginous, lanceolate, 1-flowered; nut obovate, smooth, compressed, reddish brown, with a paler disk; tubercle very short, depressed, apiculate; bristles 3, one fifth the length of the nut; stamens 3; style 2-cleft. — Wilmington, North Carolina. *Curtis.* June. — Culm 12′ – 20′ high. Nut 1″ long.

* * * *Nut smooth and even: bristles hispid downward.*

24. **R. alba,** Vahl. Culms (1° – 2° high) slender, 3-angled above; leaves narrowly linear or setaceous; corymbs mostly 2, capitate, white, turning brownish, the lower one long-peduncled; spikes ovate-lanceolate, 1-flowered; nut obovate, lenticular, twice as long as the compressed subulate tubercle; bristles 10 – 20, rigid, as long as the nut and tubercle, ciliate at the base. — Wet springy places, Florida, and northward. Aug. and Sept.

25. **R. gracilenta,** Gray. Culms and leaves filiform or setaceous; corymbs 2 – 3, distant, capitate, brown; spikes densely clustered, ovate-lanceolate; nut oval, dull, as long as the slender subulate tubercle; bristles 6, twice as long as the nut. — Wet pine barrens, Florida, and northward. July and Aug. — Culms 1° – 2° high.

26. **R. glomerata,** Vahl. Culms (2° – 3° high) 3-angled; leaves narrowly linear; corymbs 4 – 12, often by pairs, capitate, dark brown; spikes ovate-lanceo-

late; nut obovate from a stalk-like base, lenticular; tubercle subulate, as long as the nut, with its dilated base equalling it in width; bristles 6, stout, nearly as long as the nut and tubercle. — Var. PANICULATA. (R. paniculata, *Gray*.) Culms stout (3°–4° high); leaves flat (2″–3″ wide); corymbs compound, paniculate, with the very numerous spikes clustered at the summit of the branches. — Bogs and springy places, Florida to North Carolina, and westward. July – Sept.

27. **R. cephalantha,** Gray. Culms (2°–3° high) nearly terete; leaves narrowly linear; corymbs 4–8, mostly by pairs, globose, compact; spikes numerous, lanceolate-oblong, dark brown; nut broadly obovate from a stalk-like base, compressed, almost truncate at the apex, and much wider than the base of the subulate tubercle; bristles 6, as long as the nut and tubercle. — Bogs and shady swamps, Florida, and northward. July and Aug.

§ 3. HALOSCHŒNUS. *Perianth none.*

28. **R. pusilla,** n. sp. Culms (6′–12′ high) and leaves bristle-form; corymbs 2–3, distant, erect-spreading, the upper one compound; spikes minute, ovate, mostly scattered on the branches, 3-flowered; scales ovate, brown; nut white, oblong-obovate, compressed-lenticular, contracted at the base, transversely wrinkled; tubercle depressed-conical, free at the base. — Margins of pine-barren ponds, Middle and West Florida. June.

29. **R. divergens,** n. sp. Culms (6′–12′ high) and leaves filiform or bristle-form; corymbs 2–3, distant, spreading; spikes small, scattered, pedicelled, 3-flowered; scales brown, ovate; nut obovate, biconvex, minutely pitted; tubercle depressed, sessile, minutely pointed in the centre. — Low pine barrens, Florida to South Carolina. June.

30. **R. Chapmanii,** M. A. Curtis. Culms (12′–20′ high) densely tufted, erect, setaceous or filiform, like the short and flat leaves; corymb solitary, terminal, capitate; spikes whitish, lanceolate, densely clustered, 1-flowered; scales 5, the uppermost fertile; nut oval, lenticular, smooth and shining; tubercle short, sessile, broadly conical; stamens 1–2. — Flat pine barrens, Florida to South Carolina. July and Aug.

15. CERATOSCHŒNUS, Nees. HORNED-RUSH.

Spikes few-flowered. Scales loosely imbricated, the lower ones empty, the upper with staminate or abortive flowers. Perianth of 4–6 bristles, which are dilated and connate at the base. Stamens 3. Style elongated, entire or slightly 2-cleft at the apex. Nut compressed, crowned with the persistent and hispid lower half of the style. — Perennials. Culms jointed, leafy. Spikes scattered in an open corymb, or clustered in a globose head.

1. **C. corniculatus,** Nees. Culms stout (3°–4° high), 3-angled; leaves flat, scabrous on the edges (6″–10″ wide); corymbs 3–5, erect, compound; spikes brown, ovate-lanceolate; style very long, the lower and persistent portion upwardly scabrous; nut narrowly obovate, smooth, the sides concave and minutely dotted; bristles 5–6, rigid, smoothish, half as long as the nut; tubercle subulate, 3–4 times the length of the nut. (Rhynchospora longirostris, *Ell.*) — Ponds

and ditches, Florida, and northward. July – Sept. — Leaves 1° – 2° long. Nut and tubercle nearly 1′ long.

2. **C. macrostachyus,** Gray, var. **patulus.** Corymbs very large, decompound, diffuse; style minutely 2-cleft; nut broadly obovate; bristles slender, twice as long as the nut; otherwise like No. 1. — Ponds and ditches, Florida, and northward. August. — Culms 3° – 4° high. Terminal corymbs often 1° in diameter.

3. **C. capitatus,** n. sp. Culms (2° – 3° high) nearly terete, straight, like the long narrow erect and channelled leaves; spikes densely clustered in 1 – 6 globular heads, the lateral heads long peduncled and somewhat corymbose; scales about 9 (the fourth fertile), whitish; style very long, minutely 2-cleft; nut obovate, lenticular, obscurely wrinkled, hispid on the margins above, shorter than the 6 slender bristles; tubercle bristle-awl-shaped, twice as long as the nut. — Pine-barren ponds, Middle and West Florida. June – Aug. — Leaves 2″ – 4″ wide, as long as the culm. Head composed of 30 or more spikes. Nut and tubercle 3″ long.

16. CHÆTOSPORA, R. Brown.

Spikes few- (1 – 8-) flowered. Scales imbricated in two rows; the lower ones empty, the upper bearing perfect flowers. Perianth of 3 – 6 scabrous or plumose bristles. Stamens 3. Style 3-cleft, not dilated at the base, nearly deciduous. Nut triangular, mostly pointed by the persistent base of the style. — Leaves radical, narrow. Spikes in a terminal cluster, subtended by a 1 – 2-leaved involucre.

1. **C. nigricans,** Kunth. Culms tufted, erect, slightly compressed, smooth and rigid, jointed near the summit; leaves rigid, erect, semi-terete, rough on the margins, shorter than the culms; sheaths black; involucre 2-leaved, the lowest longer than the ovoid dark brown head; spikes ovate-lanceolate, compressed, 6 – 8-flowered; scales ovate, compressed-keeled, the lowest mucronate; rachis zigzag; bristles 6, unequal, compressed, dilated at the base, hispid upward, longer than the globose-3-angled white and polished nut. (Schœnus nigricans, *L.*) — Damp soil, near Marianna, West Florida, and salt marshes, near St. Mark, Middle Florida. May. ♃ — Culms 1° – 1½° high. Although differing in some particulars, the Florida plant is probably not distinct from that of the eastern hemisphere.

17. PSILOCARYA, Torr.

Spikes many-flowered, terete. Scales imbricated in several rows, membranaceous, all bearing perfect flowers. Perianth none. Stamens 2. Style 2-cleft. Nut biconvex, transversely wrinkled, crowned with the persistent base of the style. — Culms leafy. Spikes ovate, disposed in spreading lateral and terminal corymbs.

1. **P. rhynchosporoides,** Torr. Culms nearly terete (½° – 2° high); leaves narrowly linear, longer than the culm; corymbs 2 – 3, widely spreading, the terminal one mostly compound; spikes pedicelled; scales ovate, acute; nut

orbicular, strongly wrinkled; tubercle compressed, very short, sessile, but not decurrent on the edges of the nut. (Scirpus nitens, *Vahl.*) — Shallow pine-barren ponds, Florida to North Carolina. July. ⓘ — Culms commonly rooting at the lower joints.

P. SCIRPOIDES, *Torr.*, if within our limits, may be known by its nearly smooth nut, and slender beak-like decurrent tubercle.

18. DICHROMENA, Richard.

Spikes compressed, few-flowered, aggregated in a terminal head, and surrounded by an involucre of several leaves, which are commonly white at the base. Scales imbricated in few rows, most of them bearing abortive flowers. Stamens 3. Style 2-cleft. Nut lenticular, crowned with the broad and persistent base of the style. Perianth none. Perennials. Culms jointless, leafy at the base. Scales white, membranaceous.

1. **D. leucocephala,** Michx. Culms (1° – 1½° high) slender, 3-angled; leaves narrowly linear; involucre of 4 – 7 narrow leaves; nut orbicular, wrinkled; tubercle flat, broadly conical, sessile, but not decurrent. — Damp soil, Florida to North Carolina. Aug. and Sept. — Involucre unchanged in drying.

2. **D. latifolia,** Baldw. Culms stout (2° – 3° high), nearly terete; leaves broadly linear, elongated; leaves of the involucre 8 – 9, tapering from the broad (3″ – 4″ wide) base to the slender summit, becoming reddish; nut round-obovate, faintly wrinkled; tubercle flat, conical, obtuse, the sides decurrent on the edges of the nut. — Low pine barrens, Florida to North Carolina. May – July. — Heads larger than those of the preceding.

19. CLADIUM, Browne.

Spikes ovate, 1 – 2-flowered. Scales loosely imbricated, the lower ones empty. Perianth none. Stamens 2. Style 2 – 3-cleft, the divisions often 2 – 3-cleft, deciduous. Nut globose-ovate, the pericarp thickened and corky near the apex. Tubercle none. — Culms tall. Spikes disposed in axillary and terminal cyme-like panicles.

1. **C. effusum,** Torr. (SAW-GRASS.) Culms (4° – 8° high) nearly terete; leaves linear, elongated, saw-edged; panicles numerous, diffuse; spikes small, 3 – 4 in a cluster, deep brown; scales about 6, the uppermost bearing a perfect flower, the next below staminiferous, the others empty; nut ovate, pointed, wrinkled. (Schœnus effusus, *Swartz.*) — Fresh or brackish marshes along the coast, Florida to North Carolina, and westward. July and Aug.

20. SCLERIA, L. NUT-RUSH.

Flowers monœcious. Sterile spike few – many-flowered. Scales loosely imbricated in 2 – 3 rows. Fertile flowers solitary, separate or at the base of the sterile spike. Stamens 1 – 3. Style 3-cleft. Nut globose or ovate, stony or bony. — Chiefly perennials, with creeping rootstocks, and triangular leafy culms. Spikes clustered, lateral and terminal.

§ 1. SCLERIA Proper. *Nut supported by an annular or* 3 – 6*-lobed disk.*

* *Nut smooth: stamens* 3.

1. **S. triglomerata,** Michx. Culms stout, rough, sharply angled (2° – 3° high); leaves broadly linear, smooth or hairy; spikes disposed in 3 – 6 clusters at the summit of the culm, and 1 – 2 distant lateral ones on long and drooping peduncles; disk forming a complete narrow ring at the base of the globose-ovate yellowish white nut. — Low grounds, Florida, and northward. June – August.

2. **S. oligantha,** Ell., Michx.? Culms (1° – 2° high) slender, smooth, sharply angled, often glaucous, like the smooth linear leaves; spikes 3 – 5, single, scattered, forming a terminal interrupted compound spike, and 1 – 2 distant lateral ones, on long drooping peduncles; bracts leafy; disk of 9 minute globular lobes at the base of the white and polished ovate nut. — Thickets and margins of fields, Florida to South Carolina. July.

** *Nut reticulated: disk of* 3 *flattened lobes: stamens* 2.

3. **S. reticularis,** Michx. Culms slender (1° – 1½° high), scabrous below; leaves narrowly linear; spikes clustered, axillary and terminal, the lateral ones on a short erect peduncle; nut globose, small, reticulated and pitted; lobes of the disk appressed to the base of the nut. — Margins of ponds, Florida, and northward. Aug. and Sept.

4. **S. laxa,** Torr. Culms weak, rough on the angles; leaves linear, obtuse; spikes separate, the axillary ones on a long and drooping peduncle; nut globose, wrinkled and somewhat hairy, obscurely pitted; lobes of the disk appressed to the nut. (S. reticularis, *Ell.*) — Damp pine barrens, Florida, and northward. Aug. – Oct. — Culms 1° – 1½° long. Nut 1½″ – 2″ in diameter.

*** *Nut warty: disk bearing* 3 – 6 *globular lobes: stamens* 3.

5. **S. ciliata,** Michx. Culms slender, rigid (1½° – 2° high), smooth below, sparingly fringed on the angles above; leaves 2, narrowly linear (1″ wide), rigid, smooth, or with scattered hairs on the margins; sheaths pubescent; clusters terminal; sterile spikes large, many-flowered; nut globose, pointed, closely beset with unequal warts, these corresponding to the angles of the nut and at the base larger than the rest; lobes of the disk 3, globular, entire. — Dry pine barrens. Florida to South Carolina. June – Aug. — Rhizoma thick and creeping.

6. **S. Elliottii.** Culms stout (½° – 1° high), densely rough-fringed on the angles throughout; leaves 3 – 4, broadly linear (2″ – 3″ wide), closely fringed on the margins and midrib beneath; sheaths pubescent; clusters 2, the lateral one remote, on a short erect peduncle; sterile spike small, few-flowered; nut globose, deeply wrinkled or pitted, and with slender warty projections at the base; lobes of the disk 3, globose, 2-lobed. (S. hirtella, *Ell., Michx.*? not of *Swartz.*) — Low pine barrens, Florida to North Carolina. July.

7. **S. pauciflora,** Muhl. Smoothish or hairy or villous throughout; culms (6′ – 12′ high) slender; leaves narrowly linear; clusters small, of 1 – few spikes, terminal, and also a remote axillary one on a short erect peduncle; sterile spike few-flowered; nut globose (small), pointed, closely beset with minute

warts, those at the base elongated; lobes of the disk 6, distinct, globose. (S. Caroliniana, *Willd.*, the villous form.)

Var. **glabra.** Smooth throughout, or the leaves and bracts scabrous at the summit; culms erect (1° high), rigid, but slender, like the erect leaves; clusters terminal; spikes many-flowered; lobes of the disk 3, each 2-lobed. This also varies, with longer (2° – 2½°) diffuse culms, and with 1 – 2 distant axillary clusters on long (5′ – 10′) drooping peduncles. — Low sandy pine barrens, Florida, and northward; the varieties chiefly southward. May – Aug.

§ 2. HYPOPORUM. *Disk none: nut concave and often pitted at the sides of the triangular base.*

* *Clusters of spikes terminal, leafy-bracted.*

8. **S. Baldwinii,** Torr. Culms rough above (2° – 3° high); leaves mostly 2, linear, rigid; nut large (2″ long) dull white, globose-ovate, obscurely angled, longitudinally furrowed, concave at the sides of the abruptly contracted base, slightly pointed. — Pine-barren swamps, Florida and Georgia, near the coast. June and July.

9. **S. gracilis,** Ell. Culms slender (1° high), smooth, like the filiform leaves; nut small (1″ long), ovate, dull white, furrowed lengthwise, the sides at the base concave and pitted. — Low pine barrens, Florida to South Carolina. June and July. — Plant brownish, tufted.

* * *Clusters of spikes (small) numerous, scattered near the summit of the culm, forming an interrupted compound spike: bracts mostly short.*

10. **S. filiformis,** Swartz. Glaucous; culms slender (1½° – 2° high), smooth; leaves narrowly linear, rough on the margins and keel, ciliate at the throat; clusters 3 – 4, erect, few-flowered, the lowest remote, leafy-bracted; scales lanceolate, rough-pointed; stamens 3; nut obovate, obscurely 3-angled, smooth and glassy, concave at the base, not pitted. — South Florida. Oct.

11. **S. verticillata,** Muhl. Culms very slender (6′ – 12′ high), smooth, like the narrowly linear or filiform leaves and sheaths; clusters 3 – 5, erect; scales smooth; nut very small, globose-3-angled, pointed, rough with raised wavy ridges, not pitted at the base. — Varies with hairy sheaths, more numerous (6 – 9) clusters, and reticulated nuts. — Damp soil, Florida, and northward. June and July.

12. **S. Michauxii.** Culms (6′ – 12′ high) smooth; leaves linear, and, like the sheaths, hairy; clusters 4 – 6, nodding; scales bristle-awned; nut globose-3-angled, very minute, pointed, smooth, not pitted at the base. (S. interrupta, *Michx.*, not of *Richard.*) — Low pine barrens, Florida to South Carolina. July and Aug.

21. CAREX, L. Sedge.

Flowers monœcious, rarely dioœcious, spiked. Sterile and fertile flowers in the same spike (*androgynous*), or in separate spikes. Scales imbricated in few – many rows. Stamens 2 – 3. Style 2 – 3-cleft, exserted from a sac (*perigynium*) which encloses the ovary and the lenticular biconvex or 3-angled nut. — Peren-

nials, with grass-like leaves. Spikes from the axils of scale-like or leaf-like bracts, simple or compound.

§ 1. VIGNEA. *Stigmas two: nut lenticular, or more or less compressed.*

A. *Spikes bearing both sterile and fertile flowers.*

* *Spikes with the sterile and fertile flowers variously disposed.*

1. **C. bromoides,** Schk. Spikes 4 – 6, distinct, oblong-lanceolate, compressed; perigynia lanceolate, erect, finely nerved, ending in a long flat rough-margined 2-cleft beak, longer than the ovate-lanceolate mucronate scale. — Swamps and bogs, Florida, and northward. March and April. — Culms tufted, weak and slender, 1° – 1½° high. Leaves narrowly linear. Spikes occasionally wholly sterile or fertile. Perigynia somewhat 2-ranked.

* * *Spikes with the upper flowers sterile, the lower fertile.*

+ *Spikes indefinite, disposed in a close panicle.*

++ *Perigynia sessile.*

2. **C. decomposita,** Muhl. Panicle long, drooping, the upper spike-like branches densely clustered, the lower elongated, distinct, and spreading; perigynia obovate, biconvex, nerved, abruptly short-beaked, about the length of the ovate pointed white-margined scale. — Wet margins of ponds and streams, Florida, and northward. May. — Culms erect, stout, 2° – 3° high. Panicle 4′ – 6′ long. Bracts of the lower spikes bristle-form. Perigynia dark brown at maturity.

3. **C. vulpinoidea,** Michx. Panicle spike-like, erect; clusters of spikes 8 – 12, short, oval, the upper ones densely crowded; perigynia small, ovate, compressed, short-beaked, 2-cleft at the orifice, faintly nerved at the broad base; scales yellowish, mucronate. (C. multiflora, *Muhl.*) — Swamps, South Carolina, and northward. May. — Culms 1½° – 2° high. Panicle 2′ – 3′ long, cylindrical. Bracts of the lower spikes setaceous or leaf-like, often exceeding the panicle. Perigynia yellowish at maturity.

++ ++ *Perigynia short-stalked, truncate at the base.*

4. **C. crus-corvi,** Shuttleworth. Panicle very large, the lower branches long and distinct, the upper short and crowded; perigynia plano-convex, ovate, strongly nerved, dilated at the base, tapering into a long and slender rough-edged deeply 2-cleft beak, thrice the length of the ovate mucronate scale. — River-swamps, West Florida, and westward. May. — Culms thick and spongy, sharp-angled, and, like the broad (½′ – ¾′ wide) leaves, glaucous. Panicle 4′ – 9′ long, oblong or spike-like. Perigynia widely spreading, brown at maturity.

5. **C. stipata,** Muhl. Panicle oblong; the short ovate branches densely clustered; perigynia ovate-lanceolate, strongly nerved, tapering into a stout rough-edged erect-spreading 2-cleft beak, 2 – 3 times the length of the scale. — Swamps, Florida to Mississippi, and northward. April and May. — Plant yellowish. Culms 1° – 2° high, sharp-angled, thick and spongy. Leaves 4″ – 9″ broad.

+– +– Spikes 4 – 10, disposed in a simple spike or head, or (in No. 6) the lowest ones compound.

6. **C. sparganioides,** Muhl. Spikes 6 – 10, ovoid, the upper ones crowded, the lower scattered and often compound; perigynia flattened, ovate, acute at the base, narrowly margined, nerveless, spreading, with a short and rough 2-cleft beak, twice as long as the thin ovate scale. — Upper districts of Georgia, and northward. — Culms stout, 2° high. Leaves broadly linear, as long as the culm. Common spike 2′ – 4′ long. Perigynia yellowish.

7. **C. Muhlenbergii,** Schkr. Spikes 5 – 8, ovoid, approximate, or crowded in an oblong head; perigynia round-ovate, plano-convex, strongly nerved, with a short and broad rough-edged 2-cleft beak, barely longer than the ovate short-pointed scale. — Dry sterile soil, South Carolina, and northward. — Culms 12′ – 18′ high, rigid, rough above, twice as long as the narrow leaves. Head or spike 1′ long. Bracts bristle-form, longer than the spikes.

8. **C. cephalophora,** Muhl. Spikes 5 – 6, small, crowded in a compact ovoid head; perigynia broadly ovate, few-nerved, short and rough-beaked, as long as the ovate long-pointed scale. — Dry soil, Florida, and northward. — Culms 9′ – 15′ high, naked above, rough on the angles, tough and wiry. Leaves narrow. Head ½′ long. Bracts bristle-like.

9. **C. rosea,** Schk. Spikes 4 – 6, 8 – 10-flowered, the two upper ones approximate, the others scattered, perigynia oblong, plano-convex, rough-beaked, spreading at maturity, twice as long as the broadly ovate obtuse or short-mucronate scale. (C. radiata, *Dew.*, a form with more slender culms, and 3 – 4-flowered spikes.) — Upper districts, Georgia, and northward. — Culms 1° high, smooth, longer than the narrow leaves. Common spike 2′ – 3′ long. Bract of the lowest spike commonly exceeding the culm.

10. **C. retroflexa,** Muhl. Spikes 4 – 5, crowded, or the lower ones distinct, ovoid, the lowest short-bracted; perigynia ovate-lanceolate, smooth-beaked, 2-cleft, at length widely spreading or reflexed, barely longer than the ovate long-pointed scale. — Open woods, Florida, and northward. — Culms slender, 1° high, rough-angled above. Leaves narrow, shorter than the culm. Common spike about 1′ long.

** * * Spikes with the lower flowers sterile, the upper fertile.*

11. **C. stellulata,** Good. Spikes 3 – 5, obovoid, distinct, the uppermost club-shaped at the base; perigynia ovate, rounded at the base, tapering into a short and rough 2-cleft beak, finely nerved, spreading and finally recurved, rather longer than the ovate pointed scale. (C. scirpoides, *Schk.*) — Shady river-swamps, Florida, and northward. — Culms 6′ – 12′ high, weak. Leaves narrow and tender. Spikes small.

Var. **sterilis.** Sterile and fertile spikes on separate culms, or some of them either sterile or fertile on the same culm, otherwise like the preceding, and growing in similar places. (C. sterilis, *Willd.*)

Var. **conferta.** Culms taller (2° high) and stouter; spikes larger and more crowded; perigynia round-ovate, twice as long as the broadly ovate barely pointed scale. — Pine-barren swamps.

12. **C. canescens,** L., var. **vitilis,** Carey. Spikes 5 – 7, small, scattered, roundish, 6 – 10-flowered; perigynia ovate, plano-convex, short and rough-beaked, spreading and tawny at maturity, rather longer than the ovate acute white scale. (C. sphærostachya, *Dew.*) — High mountains of North Carolina, and northward. — Culms weak and slender, 10′ – 15′ high, longer than the narrow and tender leaves.

13. **C. scoparia,** Schk. Spikes 6 – 8, approximate, ovate or oblong, many-flowered; perigynia oblong-lanceolate, narrowly margined, acute at the base, tapering into a long 2-cleft rough beak, longer than the ovate-lanceolate pointed scale, turning light brown at maturity. — Swamps, South Carolina, and northward. — Culms 1° – 2° high, rough above, longer than the narrow leaves.

Var. **lagopodioides.** Spikes 10 – 15, obovoid; perigynia lanceolate, remaining pale green at maturity, nearly twice as long as the rather obtuse scale. (C. lagopodioides, *Schk.*) — Mountains of North Carolina, and northward. — Culms commonly taller than the preceding.

14. **C. straminea,** Schk. Spikes 3 – 6, distinct, ovoid; perigynia ovate or round-ovate, broadly winged, abruptly narrowed into a short 2-cleft beak, somewhat tawny and spreading at maturity, longer than the ovate-lanceolate scale.

Var. **festucacea.** Spikes 6 – 8, pale, obovoid or somewhat club-shaped, scattered; perigynia ovate, less broadly margined, tapering into a more slender beak, erect and pale green at maturity. (C. festucacea, *Schk.* C. fœnea, *Torr., &c.*, a form with more rigid culms, and more crowded and glaucous spikes.) — Swamps, very common. — Culms 1° - 2° high. Leaves narrowly linear, shorter than the culm.

15. **C. fœnea,** Muhl. Spikes 6 – 10, large (6″ – 8″ long), ovoid, approximate; perigynia flat, broadly obovate, wing-margined, abruptly contracted into a very short beak, longer than the lanceolate scale; nut oval, stalked. (C. alata, *Torr.*) — Marshes, Florida to North Carolina. — Culms 2° – 3° high, leafy below the middle. Spikes brownish at maturity. Perigynia 2½″ long.

B. *Terminal spikes sterile: the others fertile or with few sterile flowers at the summit: perigynia beakless.*

* *Scales awnless, black or brown: bracts scarcely exceeding the culm: leaves narrowly linear, glaucous.*

16. **C. torta,** Boott. Sterile spike solitary, peduncled; fertile spikes mostly 3, linear-club-shaped, loosely flowered below, spreading, the lowest peduncled; perigynia elliptical, tapering and at length spreading or recurved at the apex, nerveless or nearly so, as long as the oblong black scale; culms smooth (1° high); leaves narrowly linear. (C. verrucosa, *Schw.*, not of *Ell.*) — Mountain swamps, North Carolina, and northward.

17. **C. stricta,** Good. Sterile spikes 1 – 2; fertile spikes 2 – 4, linear-cylindrical, sessile or the lowest short-peduncled, erect, dense-flowered; perigynia elliptical, erect, nerveless, commonly shorter than the narrow obtuse reddish-brown scale; culms (2° high) rough-angled; leaves linear. (C. acuta, *Ell., &c.*, not of *Linnæus.*) — Swamps in the upper districts, and northward.

* * *Scales awned, green: fertile spikes on nodding peduncles: bracts long and leaf-like: leaves broadly linear.*

18. **C. crinita,** Lam. Sterile spikes mostly 2, often with fertile flowers intermixed; fertile spikes 3–4, long-cylindrical, dense-flowered, on long drooping peduncles; perigynia round-ovate or obovate, somewhat inflated, 2 nerved, abruptly short-pointed, shorter than the long and rough-awned scale; culms rough-angled above (2°–3° high). — Swamps in the upper districts, and northward. — Spikes $1\frac{1}{2}'$–$3'$ long.

19. **C. Mitchelliana,** M. A. Curtis. "Spikes in threes, peduncled, somewhat distant, oblong, slightly nodding; terminal spike staminate at the base and summit; the lowest peduncle scarcely sheathed; perigynia ovate, acute, glabrous; scales oblong, the lowest with a long cusp much exceeding the fruit, the upper about equalling it. — Wet places, Chatham County, North Carolina." *Curtis.* — Culm slender, 18′ high, rough above. Spikes 1′ long.

§ 2. CAREX Proper. *Stigmas 3: nut 3-angled.*

A. *Spike solitary.*

* *Diœcious.*

20. **C. Boottiana,** Benth. Culms slender, naked, rough, shorter than the linear bright-green radical leaves; spikes (rarely 2) many-flowered, purplish, cylindrical, erect; fertile spike dense-flowered; perigynium obovate, obtuse or abruptly short-beaked, ciliate and 2-toothed at the orifice, nerved, pubescent, ciliate-toothed on the angles, shorter and narrower than the oblong-acute or abruptly pointed purple scale. — North Alabama, *Peters,* and westward. — Culms 6′–8′ long. Spikes 1′–2′ long.

* * *Monœcious. Spike sterile above, fertile below.*

21. **C. polytrichoides,** Muhl. Spike linear, few-flowered; perigynia lanceolate-oblong, many-nerved, obtuse and entire at the apex, twice as long as the oblong mucronate scale; bract scale-like or occasionally leafy and exceeding the spike; culms tufted, filiform, weak (6′–12′ high), rough above, longer than the very narrow leaves. — Bogs and swamps, Florida, and northward.

22. **C. Fraseri,** Sims. Spike oblong, many-flowered, the fertile portion globose; perigynia ovoid, inflated, abruptly short-pointed, longer than the oblong obtuse hyaline scale; leaves very wide (1′ or more), obtuse, serrulate and wavy on the margins, convolute below, and sheathing the base of the naked smooth culm. — Shady banks of streams on the mountains of North Carolina. — Leaves 6′–12′ long, longer than the culm.

23. **C. Steudelii,** Kunth. Spike linear (6″–10″ long); sterile flowers 20–25; perigynia 1–4, ovoid, smooth, 3-nerved, abruptly contracted into a slender compressed rough-edged beak, longer than the ovate white green-keeled scale; leaves linear, flat, abruptly pointed, longer than the bristle-like prostrate culms. — Shady banks, Florida, and westward. — Culms 3′–6′ long. Plant whitish.

24. **C. Willdenovii,** Schk. Sterile flowers 4–8, forming a minute linear spike; perigynia 6–9, oblong, with 3 rough angles; lower scales longer than

the spike, often leafy; otherwise like the last. — Shady woods, North Carolina, and northward. — Plant deep green.

B. *Spikes two or more.* (*In No.* 25 *oftener solitary.*)

* *Terminal spike sterile below* (*often wholly so in Nos.* 26 *and* 35), *fertile above, the others chiefly fertile.*

+ *Perigynia inflated, contracted into a long and slender beak.*

25. **C. squarrosa,** L. Spikes 1 – 4, oval, thick ($\frac{1}{2}'$ – $\frac{3}{4}'$), erect, peduncled; perigynia horizontal, obovate, smooth, 3-nerved, abruptly contracted into a long subulate smooth 2-cleft beak, longer than the lanceolate acute scale. — Swamps and meadows, near the mountains, Georgia, and northward. — Culms 8′ – 16′ high, shorter than the linear leaves and bracts.

26. **C. stenolepis,** Torr. Spikes 4 – 7, the terminal one small, often wholly sterile or fertile, the others cylindrical, erect, dense-flowered, the upper ones approximate and nearly sessile, the lower scattered, on exserted peduncles; perigynia horizontal, contracted into a long and slender 2-cleft beak, shorter than the awn-like scales. — Swamps and meadows, upper districts of Georgia to Mississippi, and northward. — Culms 1° – 1½° high, flexuous above, shorter than the broad leaves and bracts.

++ *Perigynia beakless.*

++ *Spikes approximate, ovoid or cylindrical, dense-flowered, sessile, or on short and erect peduncles: bracts short.*

27. **C. Buxbaumii,** Wahl. Spikes 3 – 4, oblong, the upper one peduncled, the others sessile or nearly so; perigynia whitish, smooth, elliptical, compressed-3-angled, obtuse and emarginate at the apex, commonly shorter than the ovate acute or awn-pointed blackish scale. — Mountains of Georgia, and northward. — Culms 1° – 1½° high, rough above, longer than the narrow glaucous leaves.

28. **C. hirsuta,** Willd. Spikes 2 – 4 (mostly 3), sessile or nearly so, ovoid or oblong, many-flowered; perigynia pubescent or at length smoothish, ovate, compressed-3-angled, strongly nerved, obtuse and emarginate at the apex, about as long as the oblong mucronate white scale. — Damp soil, Florida to Mississippi, and northward. — Culms erect, 1° – 1½° high, rough-angled, and, like the narrow leaves and sheaths, more or less pubescent.

29. **C. triceps,** Michx.? Spikes 3 – 4, ovoid or oblong, sessile, few-flowered; perigynia smooth, round-pear-shaped, obscurely angled, faintly nerved, contracted into a short and entire point, as long as the oblong obtuse or barely pointed white scale. — North Carolina (*Curtis*), Tennessee, and northward. — Culms 1° high, very slender. Leaves and sheaths smooth.

30. **C. virescens,** Muhl. Spikes 2 – 3, cylindrical, short-peduncled, densely many-flowered; perigynia small, pubescent, ovoid, strongly nerved, 3-angled, acute and entire at the apex, as long as the ovate mucronate white scale. — Low grassy meadows, North Carolina, and northward. — Culms 1° – 2° high, rough. Leaves and sheaths hairy.

++ ++ *Spikes remote, linear or cylindrical, rather loosely flowered, on long and mostly drooping peduncles: bracts long and leaf-like: perigynia smooth, somewhat inflated, few and faintly nerved.*

31. **C. oxylepis,** Torr. & Hook. Spikes 4 – 5, linear, all on long bristle-like partly included nodding peduncles, distant; perigynia oblong, acute-angled, emarginate at the pointed apex, longer than the lanceolate rough-pointed white scale. — Low ground, Florida, and westward. — Culms slender, 1½° – 2° high, the lower part, like the leaves and sheaths, pubescent.

32. **C. æstivalis,** M. A. Curtis. Spikes 3 – 5, linear or filiform, loosely flowered, erect, the lowest on nearly exserted peduncles, the upper almost sessile; perigynia oblong, obtuse-angled, obtuse and entire at the apex, twice as long as the ovate obtuse or emarginate scale. — Mountains of North Carolina, and northward. — Culms 1° - 1½° high, smooth. Lowest sheaths pubescent.

33. **C. gracillima,** Schw. Spikes 3 – 5, distant, linear, on slender and nodding peduncles; perigynia oblong, obtuse, entire and oblique at the orifice, about twice as long as the oblong obtuse short-awned scale. — Wet meadows, North Carolina, and northward. — Culm 1° – 2° high. Spikes 1′ – 1½′ long, thicker than those of the preceding. Sheaths smooth.

34. **C. Davisii,** Schw. & Torr. Spikes 3 – 4, remote, oblong-cylindrical, all on slender nearly exserted peduncles, nodding; perigynia ovate-oblong, inflated, round-angled, emarginate at the pointed apex, longer than the oblong awned scale. — Mountains of Georgia, and northward. — Culms 1½° – 2° high. Leaves and sheaths more or less pubescent. Spikes rather dense-flowered.

35. **C. miliacea,** Muhl. Spikes 4, linear, all on exserted nodding peduncles, the terminal one often wholly sterile; perigynia yellowish, ovate, compressed-3-angled, nerveless or nearly so, tapering into a spreading slightly emarginate point, as long as the oblong mucronate scale. — Mountains of Georgia, and northward. — Culms weak, 1° – 1½° high. Sheaths smooth. Lower perigynia scattered.

* * *Terminal spikes sterile, the others fertile, or with few sterile flowers at the summit.*

+– *Perigynia small (1″ – 3″ long), slightly or not at all inflated, obtuse or short-beaked.*

++ *Fertile spikes sessile, ovoid or oblong, dense-flowered; perigynia pubescent, short-beaked or pointed.*

36. **C. filiformis,** L. Sterile spikes 2 or more, slender, long-peduncled; fertile spikes 1 – 3, distant, oblong; perigynia ovoid, obtuse, 3-angled, densely pubescent, obscurely nerved, abruptly contracted into a short emarginate point, longer than the oblong mucronate brown scale. — Bogs and swamps, South Carolina, and northward. — Culms 2° high, smooth. Leaves filiform, elongated. Bracts leafy, many times longer than the spikes.

37. **C. vestita,** Willd. Sterile spikes 1 – 2, thick, short-peduncled; fertile spikes 1 – 2, approximate, ovoid or oblong; perigynia oblong-ovate, 3-angled, densely pubescent, strongly nerved, tapering into a distinct beak, with a white membranaceous 2-cleft orifice, longer than the oblong mucronate brown scale. — Sandy swamps in the upper districts, and northward. — Culms rigid, acute-

angled, 1° – 2 high. Leaves short, linear. Bracts short, the upper one shorter than the spikes.

38. **C. dasycarpa,** Muhl. Sterile spike single, short-peduncled; fertile spikes 2 – 3, approximate, oblong; perigynia woolly, oblong, 3-angled, striate, scarcely beaked, with the orifice entire, twice the length of the ovate barely pointed pale scale; nut stalked. — Shady woods, Florida to South Carolina. — Culms 6′ – 12′ high, rough-angled. Leaves pubescent.

39. **C. tenax,** Chapm. Culms (10′ – 15′ high) and rigid channelled leaves rough, but not pubescent; spikes and ovate beaked and less pubescent perigynia larger; nut sessile; otherwise like the preceding, and possibly a stouter form of it. — Dry sand-ridges, Middle Florida.

40. **C. Pennsylvanica,** Lam. Sterile spike single; fertile spikes mostly 2, ovoid, approximate, 4 – 6-flowered, the lower one with a short or scale-like colored bract; perigynia nearly globose, pubescent, abruptly contracted into a short 2-cleft beak, longer than the oblong-ovate dark brown scale. (C. marginata, *Muhl.*) — Var. MUHLENBERGII, *Torr. & Gray.* Fertile spikes mostly 3, 6 – 10-flowered, distinct, the lowest leafy-bracted; perigynia ovate, tapering into a short beak; scales light brown. (C. varia, *Muhl.*) — Dry woods, in the upper districts, Georgia, and northward. — Culms 4′ – 8′ high, longer than the leaves.

41. **C. lucorum,** Willd. Sterile spike single; fertile spikes 3 – 4, ovoid, few-flowered, approximate, or the lowest remote and usually leafy-bracted; perigynia ovoid, more or less pubescent, acute at the base, tapering into a slender rough 2-cleft beak, about the length of the ovate-oblong acute scale; leaves narrowly linear. — Var. NIGRO-MARGINATA. (C. nigro-marginata, *Schw.*) Perigynia 3-angled; scales with brown or black sides; culms 1′ – 2′ high. — Var. FLORIDANA. (C. Floridana, *Schw.*) Perigynia compressed-3-angled or lenticular (but the stigmas 3); scales white or margined with black; culms 2′ – 12′ long, prostrate or erect. — Var. EMMONSII. (C. Emmonsii, *Dew.*) Perigynia 3-angled, acuminate at each end, nearly smooth; scales white; culms bristle-form, prostrate. — Dry sandy soil, Florida to North Carolina.

†† †† *Fertile spikes linear or cylindrical, remote, all, or the lowest, on distinct and commonly elongated peduncles.*

= *Perigynia striated with numerous fine nerves: sterile spike always single.*

† *Perigynia smooth, nearly terete, obtuse or barely pointed: bracts long and leaf-like: spikes erect.*

42. **C. grisea,** Wahl. Sterile spike short, sessile; fertile spikes 3 – 4, linear-oblong, rather loosely-flowered (4″ – 8″ long), the upper one nearly sessile; perigynia oblong-ovoid, pointless, somewhat inflated, twice as long as the white ovate rough-awned scale. — Varies (C. flaccosperma, *Dew.*), with longer (1′ or more) cylindrical spikes, and nearly awnless scales. — Low ground, Florida to Mississippi, and northward. — Culms smooth, 1° – 1½° high. Leaves and bracts broadly linear. Upper spikes commonly approximate, the lowest very remote, on a long erect peduncle. Perigynia often indented near the apex.

Var. **angustifolia,** Boott. Sterile spike long-peduncled; fertile spikes mostly 3, linear, few-flowered, very remote, the lowest at the base of the culm; perigynia 4 – 8, lanceolate-oblong, 3-angled, alternate and 2-ranked, pointless and entire at the apex, longer than the ovate rough-awned scale. — Dry open woods, Florida. — Culms filiform, 8′ – 12′ high. Leaves and bracts linear. Lowest sheaths dark-brown.

43. **C. granularis,** Muhl. Sterile spike short, sessile; fertile spikes 3 – 4, linear-cylindrical, densely many-flowered, yellowish, the upper one nearly sessile, the lowest distant and long-peduncled; perygynia small, globose-ovate, contracted into a minute mostly recurved entire or emarginate point, longer than the ovate obtuse or barely pointed scale. — Meadows and banks of streams, Florida, and northward. — Culms 6′ – 12′ high. Leaves and bracts broadly linear, 3-nerved.

44. **C. conoidea,** Schk. Sterile spike long-peduncled; fertile spikes 2 – 3, oblong or cylindrical, densely many-flowered, remote; perigynia small, oblong-ovoid, obtuse, striate with impressed nerves, smooth and shining, equalling or the lower shorter than the ovate pointed or short-awned scale. — Mountains of North Carolina, and northward. — Culms 6′ – 12′ high. Leaves and bracts linear. Spikes ½′ – ¾′ long, the lowest long-peduncled.

45. **C. tetanica,** Schk Sterile spike short-peduncled; fertile spikes 1 – 3, linear-cylindrical, remote, loosely flowered; perigynia obovate, narrowed at the base, contracted into a short bent point, longer than the ovate acute or short-awned scale. — Mountains of North Carolina, and northward. — Culms 1° high. Leaves and bracts narrowly linear.

† † *Perigynia smooth (except No.* 51), *3-angled, with a recurved or spreading point: lowest peduncles elongated and often recurved.*

Bracts leafy: scales white.

46. **C. laxiflora,** Lam. Sterile spike peduncled, exceeding the bracts; fertile spikes 2 – 3, remote, linear, loosely 8 – 12-flowered; perigynia oblong-obovate, tapering into a smooth spreading entire beak, longer than the oblong mucronate scale. (C. anceps, *Willd.* C. plantaginea, *Ell.* C. ignota, *Dew.*) — Plant more or less glaucous. Culm 10′ – 15′ high, usually compressed-3-angled above. Leaves linear or lanceolate, tender. Sheaths smooth.

Var. **striatula.** Culms, leaves, and especially the sheaths, rough; sterile spike sessile or nearly so, shorter than the bracts; fertile spikes 3 – 5, rather closely 12 – 20-flowered, the 2 – 3 upper ones commonly approximate; perigynia obovate, abruptly short and bent-pointed. (C. striatula, *Michx.* C. blanda, *Dew.* C. conoidea and C. tetanica, *Ell.*) — Dry open woods and margins of fields, Florida, and northward; common, and varying greatly in the form of the perigynia and width of the leaves.

47. **C. styloflexa,** Buckley. Sterile spike short-peduncled; fertile spikes 3, oblong, few-flowered, very remote, the lowest on a long and mostly nodding peduncle; perigynia lanceolate or oblong, narrowed at the base, tapering into a spreading rough-angled mostly emarginate beak, longer than the oblong mucronate scale. — Shady swamps, Middle Florida, to the mountains of North Caro-

lina. — Culms filiform, 1° – 1½° high, and, like the sheaths of the linear leaves, roughened downward.

48. **C. digitalis,** Willd. Sterile spike small, sessile, or nearly so; fertile spikes commonly 3, remote, very slender, loosely 5 – 8-flowered, all on long bristle-like peduncles, the lowest near the base of the culm and generally reclining; perigynia alternate, ovoid, with a short and spreading entire point, twice the length of the ovate acute green-keeled scale; leaves linear, green; culms 6′ – 12′ high. — Var. GLAUCA. Leaves and bracts wider (4″ – 6″), glaucous, 3-nerved; fertile spikes thicker, the two upper ones approximate and short-peduncled; perigynia larger, thrice the length of the barely-pointed scale. — Low grounds, Florida, and northward.

Bracts sheathing, leafless or nearly so: scales brown or black.

49. **C. plantaginea,** Lam. Fertile spikes 3 – 4, remote, the lowest at the base of the culm, linear, erect, loosely few-flowered, the peduncles mostly included in the brown leafless sheaths; perigynia oblong-obovate, short-pointed, longer than the ovate acute black scale. — Mountains of North Carolina, and northward. — Leaves all radical, 1′ or more wide, about as long as the slender culm.

50. **C. Caroliniana,** Buckley. Fertile spikes 3, loosely 3 – 6-flowered, remote, all on long bristle-like drooping peduncles, which are partly included in the sheaths of the short bracts; the lowest near the base of the culm; perigynia ovoid, short-pointed, rather longer than the oblong mucronate dark-brown scale. — Table Mountain, South Carolina, *Buckley.* — Radical leaves 4″ – 6″ wide, 3-nerved, exceeding the tufted culms.

51. **C. Baltzellii,** Chapm. Sterile spike rigid, often with a few fertile flowers at the base; fertile spikes 3 – 6, linear-cylindrical, closely many-flowered, one (rarely two) on an erect peduncle which is included in a leafless sheath at the base of the sterile spike, the others on long recurved or spreading radical peduncles, commonly sterile at the summit; perigynia obovate-oblong, pubescent, abruptly short-pointed, as long as the obovate obtuse mucronate reddish-brown scale. — Dry sandy soil, Middle Florida. — Leaves all radical, 2″ – 4″ wide, glaucous, very rough above, longer than the culm.

= = *Perigynia with few and scattered nerves, commonly a little inflated, straight-beaked or pointed: spikes all, or the lowest, on long and mostly nodding peduncles: bracts leafy.*

† *Spikes linear or filiform, loosely flowered: perigynia lanceolate or oblong.*

52. **C. venusta,** Dew. Fertile spikes 3 – 5, linear (1′ – 1½′ long), remote, or the two upper ones approximate and erect; perigynia oblong, acute at each end, rough-hairy, notched at the orifice, twice as long as the oblong obtuse scale. — Low banks of streams, Florida to North Carolina. — Culms 2° – 3° high. Sheaths of the linear leaves very rough.

53. **C. debilis,** Michx. Fertile spikes 3 – 5, remote, filiform, drooping; perigynia alternate, lanceolate, smooth, acute at the base, tapering into a 2-cleft beak, twice as long as the oblong obtuse one-nerved scale; sheaths smooth. —

Swamps and low grounds, Florida to Mississippi, and northward. — Culms very slender, 1° – 2° high.

54. **C. juncea,** Willd. "Spikes 2 – 4, slender, erect, brownish purple, the sterile one filiform, the fertile loosely-flowered, somewhat remote, the lowest on an exserted peduncle; perigynia 3-angled, spindle-shaped, rough at the apex, with the orifice entire; scales ovate, obtuse, and longer than the perigynia, or lanceolate, mucronate, and about equalling them." *Boott.* (C. miser, *Buckley.*) — Summit of Roan Mountain, North Carolina, *Buckley.* — Leaves somewhat bristle-form, shorter than the culm.

†† *Spikes cylindrical or oblong, densely many-flowered: perigynia ovate or roundish.*

55. **C. scabrata,** Schw. Sterile spike short, single; fertile spikes 4 – 5, rather distant, on erect exserted peduncles; perigynia ovate, rough, spreading, with few rather prominent nerves, tapering into a 2-cleft beak, longer than the oblong acute brownish scale. — Shady swamps, North Carolina, and northward. — Culms (1° – 1½° high) and broadly linear thin leaves very rough. Bracts leaf-like, destitute of sheaths.

56. **C. flacca,** Schreb. Sterile spikes 1 – 2, long and rigid; fertile spikes 2 – 3, cylindrical, all on drooping peduncles, commonly sterile at the summit; perigynia yellowish, compressed-3-angled, round-elliptical, slightly roughened, emarginate or entire at the orifice, longer than the oblong obtuse or pointed black scale. — Marshes, Alabama to North Carolina (*Curtis*), and northward. — Culms 1° – 2° high, rough-angled, longer than the rigid glaucous leaves.

57. **C. glaucescens,** Ell. Sterile spike single, long-peduncled; fertile spikes 4 – 10, cylindrical (1′ – 2′ long), all on long and drooping peduncles, mostly sterile at the summit; lowest bract exceeding the culm, the others shorter and bristle-like; perigynia glaucous, ovate, compressed-3-angled, nerveless, except at the angles, narrowed into an emarginate point, longer than the brown rough-awned scale. — Pine-barren ponds, Florida to North Carolina. — Culms 2° – 4° high, rough-angled above. Leaves glaucous, as long as the culms, bristle-like at the summit.

58. **C. verrucosa,** Ell. Sterile spikes 1 – 3, sessile or short-peduncled, often with fertile flowers variously intermixed; fertile spikes 4 – 10, cylindrical or oblong, the upper ones sessile and erect, the lower long-peduncled and drooping; perigynia glaucous, globose-obovate, 3-angled, strongly nerved, abruptly contracted into a short and entire point, about as long as the brown rough-awned scale. — Margins of ponds and rivers, Florida to North Carolina. — Culms, leaves, and bracts as in the preceding.

59. **C. Cherokeensis,** Schk. Sterile spikes 2 – 4, slender; fertile spikes 5 – 15, often 2 – 3 from the same sheath, oblong or cylindrical, sterile at the summit, all on long and nodding peduncles; perigynia whitish, oblong, compressed-3-angled, short-beaked, with the orifice membranaceous and obliquely 2-cleft, longer than the oblong acute scale; stigmas elongated. — Banks of the Apalachicola River, Florida, to the mountains of Georgia, and westward. — Plant whitish. Culms 1° – 2° high, smooth, like the linear leaves.

+ + *Perigynia large (3″–6″ long), and commonly much inflated (except Nos. 60 and 61), conspicuously nerved, tapering into a conical or long and subulate 2-cleft beak.*

++ *Sterile spike single: styles persistent, contorted: perigynia smooth: spikes many-flowered (except No. 66).*

60. **C. comosa,** Boott. Fertile spikes 4, cylindrical, approximate, on exserted nodding peduncles (1½′–2½′ long); perigynia (2″ long) oblong, spreading or reflexed, tapering into a long subulate deeply 2-cleft beak, with bristly, spreading teeth, longer than the awned scale. (C. furcata, *Ell.*) — Swamps, Georgia, and northward. — Culms stout, 2°–3° high, rough-angled above. Leaves broadly linear, and, like the bracts, exceeding the culm.

61. **C. hystricina,** Muhl. Fertile spikes 3, oblong or cylindrical, on nodding peduncles; perigynia oblong-ovate, many-nerved, spreading, tapering into a minutely 2-cleft beak, twice as long as the oblong awned scale; nut obovate, smooth. — Swamps, Georgia, and northward. — Culms 1°–1½° high, rough above, shorter than the leaves and bracts. Spikes 1′–1½′ long.

62. **C. tentaculata,** Muhl. Sterile spike nearly sessile; fertile spikes 1–3, sessile, approximate, or the lowest remote and short-peduncled, ovate or cylindrical-oblong; perigynia ovate, spreading, few-nerved, the long subulate beak cleft on the inner side, and minutely 2-toothed, twice as long as the lanceolate awned scale; nut ovoid, roughish. — Meadows and low grounds, Florida, and northward. — Culms 1°–1½° high. Leaves and bracts elongated.

63. **C. gigantea,** Rudge. Fertile spikes 3–4, oblong or cylindrical; the upper approximate and nearly sessile, the lowest distant and short-peduncled, erect; perigynia (6″–7″ long) widely spreading, strongly many-nerved, tapering from an ovate and obtuse base into a long subulate rough 2-cleft beak, with hispid teeth, twice as long as the oblong awn-pointed scale; nut depressed, 3-angled. — Pine-barren ponds, Florida to South Carolina, and westward. — Culms 2° high, smooth, shorter than the broad linear leaves and bracts.

64. **C. lupulina,** Muhl. Fertile spikes 3–4, approximate, sessile, or the lowest short-peduncled, erect, oblong, thick (1′ in diameter); perigynia (6″–7″ long) erect-spreading, tapering from the ovoid acutish base into a subulate smooth or slightly roughened beak, with smooth and spreading teeth, twice as long as the oblong awn-pointed scale; nut rhombic-oblong. — Deep river-swamps, Florida, and northward. — Culms and leaves as in the preceding.

65. **C. Halei,** Carey. Sterile spike slender, long-peduncled; fertile spikes 2–3, remote, ovoid or oblong (1′ in diameter), erect, the lowest commonly on a partly exserted peduncle, the others nearly sessile; perigynia large (6″ long), tapering from a greatly inflated and rounded base into a smooth and slender 2-cleft beak, with smooth and spreading teeth, more than twice as long as the oblong acuminate scale; nut rhomboid. — Banks of the Apalachicola River, Florida, and westward. — Culms 1° high, smooth and slender, as long as the narrow smooth leaves. Spikes whitish, 1′–1½′ long.

66. **C. subulata,** Michx. Sterile spike small; fertile spikes 3–4, remote, few-flowered, the lowest on a partly exserted peduncle, erect; perigynia 4–6,

subulate, smooth, reflexed, the rigid teeth reflexed and appressed to the slender beak, 4 times as long as the awn-pointed scale. — Deep swamps, Fayetteville, North Carolina (*Curtis*), and northward. — Culms smooth, filiform, 1°–1½° high, longer than the linear leaves.

++ ++ *Sterile spike single: style deciduous, straight or nearly so: fertile spikes few-flowered.*

67. **C. folliculata,** L. Fertile spikes 3–4, ovoid, remote, 8–10-flowered, on erect peduncles, sterile at the summit; perigynia (6″ long) horizontal, lanceolate, tapering into a smooth beak, with erect hispid teeth, one third longer than the lanceolate rough-pointed scale. — Wet margins of streams, Florida, and northward. — Culms smooth, 2° high, commonly exceeding the linear and flat leaves.

68. **C. turgescens,** Torr. Fertile spikes 2, near or remote, on short included peduncles, ovoid, 8–12-flowered; perigynia erect-spreading (4″ long), lance-ovate, strongly nerved, tapering into a smooth 2-cleft beak, with hispid erect teeth, twice as long as the ovate obtuse scale. — Pine-barren swamps, Florida to North Carolina. — Culms smooth, 2°–3° high, longer than the narrow rigid and channelled leaves.

69. **C. Elliottii,** Schw. & Torr. Fertile spikes mostly 3, approximate and nearly sessile, or the lowest remote and long-peduncled, globose, 8–16-flowered, sterile at the apex; perigynia small (3″ long), oblong-ovate, compressed, spreading, few-nerved, tapering into a short smooth beak, with erect hispid teeth, twice as long as the ovate obtuse scale. (C. Castanea, *Ell.*) — Boggy margins of pine-barren streams, Florida to North Carolina. — Culms 1°–2° high, rough above, longer than the narrowly linear leaves.

70. **C. intumescens,** Rudge. Fertile spikes 2–4, approximate, the upper sessile, the lower peduncled, globose, 10–15 flowered; perigynia large (6″ long), spreading, tapering from a rounded and greatly inflated base into a short and smooth 2-cleft beak with hispid teeth, twice as long as the ovate acuminate scale. (C. folliculata, *Ell.*) — Shady swamps, Florida, and northward. — Culms 1°–1½° high, rough above, shorter than the broadly linear deep-green leaves and bracts.

++ ++ ++ *Sterile spikes 2 or more: fertile spikes many-flowered.*

= *Perigynia pubescent.*

71. **C. trichocarpa,** Muhl. Sterile spikes about three, linear, long-peduncled; fertile spikes 2, cylindrical, on short and mostly included peduncles; perigynia thin, rough-hairy, tapering from a rounded ovate base into a rather slender rough beak, with long and spiny teeth, longer than the oblong acute awnless scale. — Deep marshes, Georgia, and northward. — Culms 2°–3° high, rough above. Leaves linear, elongated.

72. **C. striata,** Michx. Sterile spikes 2–4, long-peduncled; fertile spikes 1–4 (mostly 2), remote, sessile, or the lowest long-peduncled, oblong or cylindrical; perigynia thick, ovate, pubescent above the middle, contracted into a short and whitish 2-cleft or emarginate beak, longer than the oblong acute scale.

(C. bullata, *Ell.*) — Pine-barren swamps, Florida, and northward. — Culms $1\frac{1}{2}°-2°$ high. Leaves narrowly linear, keeled, rather rigid. Perigynia occasionally nearly smooth.

= = *Perigynia smooth.*

73. **C. riparia,** Curtis. Sterile spikes 4–6, dark brown; fertile spikes 2–3, oblong-cylindrical, sterile at the summit ($1\frac{1}{2}'-2'$ long), on erect peduncles; perigynia ovate-oblong, obscurely nerved, tapering into a smooth 2-cleft beak, longer than the oblong brown awned scale. — Deep marshes, Florida to South Carolina. — Culms stout, 2°–3° high, rough above, shorter than the broad ($\frac{1}{2}'$) smoothish and glaucous leaves and bracts.

74. **C. bullata,** Schk. Sterile spikes 2–3, long-peduncled; fertile spikes 1–2, oblong or oval (1′ long), sessile, or on very short exserted peduncles; perigynia globose-ovate, much inflated, strongly nerved, smooth and shining, slender-beaked, longer than the oblong acute scale. — Swamps, South Carolina, and northward. — Culms $1°-1\frac{1}{2}°$ high, shorter than the linear leaves and bracts.

Order 160. GRAMINEÆ. (Grass Family.)

Chiefly herbs. Stem (*culm*) mostly hollow and with closed joints. Leaves alternate, 2-ranked, narrow and entire. Sheaths open or split on one side, and usually prolonged into a membranaceous or fringed appendage (*ligula*) at the base of the blade. Flowers in spiked or panicled spikelets, consisting of 2-ranked imbricated bracts or scales; of which the exterior or lower ones, subtending one or more flowers, are called *glumes*, and the two inner ones, enclosing the 1-celled 1-ovuled ovary, and 1–11 (commonly 3) hypogynous stamens, are called *paleæ*. Perianth none, or composed of 1–3 minute hypogynous scales (*squamulæ*). Anthers versatile, 2-celled. Styles 2–3, with hairy or plumose stigmas. Fruit a caryopsis (*grain*). Embryo placed on the outside and near the base of mealy albumen. — Root fibrous.

Synopsis.

Tribe I. **ORYZEÆ.** — Spikelets 1-flowered, mostly imperfect. Glumes none. Paleæ 2. Stamens 1–11.

1. LEERSIA. Flowers perfect, compressed, panicled. Paleæ unequal, ciliate.
2. ZIZANIA. Flowers monœcious; the pistillate and staminate ones in the same panicle.
59. LUZIOLA. Flowers monœcious; the pistillate and staminate ones in separate panicles.
3. HYDROCHLOA. Flowers monœcious; the pistillate and staminate ones in separate spikes.
60. MONANTHOCHLOË. Flowers dicœcious, in terminal spikes.

Tribe II. **AGROSTIDEÆ.** — Spikelets 1-flowered, or with the pedicel of a second flower above. Glumes 2. Paleæ mostly 2, the lower one often awned. Stamens 1–3. Spikelets in open or closely spiked panicles.

* Glumes united at the base, strongly compressed-keeled.

4. ALOPECURUS. Lower palea awned on the back, the upper wanting. Flowers spiked.

* * Glumes distinct, concave or keeled. Paleæ membranaceous. Grain free. Spikelets in open or contracted panicles.

5. SPOROBOLUS. Flowers awnless. Seed loose in the globose or obovoid pericarp.
6. VILFA. Flowers awnless. Seed adhering to the closely investing pericarp.
7. AGROSTIS. Paleæ shorter than the nearly equal glumes, the lower awned on the back, the upper sometimes wanting.
8. POLYPOGON. Paleæ much shorter than the long-awned glumes, the lower one truncated and toothed. Stamens 3. Panicle spike-like.
9. CINNA. Paleæ rather longer than the acute glumes, the lower one awned under the apex. Stamen 1. Panicle loose.
10. MUHLENBERGIA. Lower glume smaller than the upper one. Paleæ bearded at the base, the lower one mucronate or awn-pointed. Stamens 3.
11. BRACHYELYTRUM. Lower glume obsolete. Lower palea long-awned. A pedicel of a second flower at the back of the upper paleæ. Stamens 2.
12. CALAMAGROSTIS. Paleæ surrounded with a tuft of long hairs, the lower awned on the back.

* * * Paleæ raised on a hairy stalk; the lower one awned, indurated, and involute, closely investing the grain.

13. STIPA. Lower palea with a single contorted awn jointed with its apex. Panicle short.
14. STREPTACHNE. Lower palea with a single straight or curved awn continuous with its apex. Panicle elongated.
15. ARISTIDA. Lower palea triple-awned. Panicle elongated.

TRIBE III. **CHLORIDEÆ.** — Spikelets 2 – several-flowered (in No. 16 one-flowered), in 1-sided spikes. Rachis jointless. Upper flowers imperfect. Glumes and paleæ 2. Spikes racemed or digitate, rarely single.

* Spikelets strictly 1-flowered. (See Paspalum.)

16. SPARTINA. Spikelets flat, imbricated in alternate spikes.

* * Spikelets 2 – 3-flowered, only the lowest flower perfect.

17. GYMNOPOGON. Spikelets linear, scattered. Lower palea and rudiment awned. Spikes racemed.
18. EUSTACHYS. Spikelets roundish, crowded. Lower palea mucronate. Spikes digitate.
19. CYNODON. Lower palea awnless. Culms creeping. Spikes digitate.

* * * Spikelets 4 – 5-flowered, one of the middle ones only perfect.

20. CTENIUM. Lower palea stout-awned on the back. Spike solitary.

* * * * Spikelets mostly several-flowered, the lower flowers perfect.

21. DACTYLOCTENIUM. Spikes digitate. Upper glume awned. Paleæ pointed.
22. ELEUSINE. Spikes digitate. Glumes and paleæ awnless.
23. LEPTOCHLOA. Spikes racemed, long and slender. Glumes awnless.

TRIBE IV. **FESTUCACEÆ.** — Spikelets panicled, few – many-flowered; the upper and (in No. 36 and 37) the lower flowers also imperfect. Glumes 2. Paleæ 2, membranaceous or rarely indurated, awnless, or the lower one with a straight awn at or near the apex. Stamens 1 – 3.

* Grain smooth, free from the paleæ. Lower flowers perfect.

† Lower palea 3 – 5-toothed or awned.

24. TRICUSPIS. Spikelets 5 – 7-flowered. Lower palea slightly 2-cleft, the 3 hairy nerves percurrent.
25. TRIPLASIS. Spikelets 3-flowered, the lower palea deeply 2-cleft, and with a plumose awn between the teeth.

+– +– Lower palea entire, awnless or (in No. 33) awn-pointed.

++ Glumes unlike, the lower one linear, the upper obovate.

26. EATONIA. Spikelets 1–5-flowered. Culms slender, tufted.

++ ++ Glumes alike. Lower palea rounded on the back, not keeled.

27. MELICA. Spikelets 3–5-flowered. Lower palea many-nerved.
28. GLYCERIA. Spikelets 5–many-flowered. Lower palea strongly 7-nerved.
29. ARUNDINARIA. Spikelets loosely many-flowered. Culms woody.
30. BRIZOPYRUM. Spikelets diœcious. Lower palea rigid.

++ ++ ++ Glumes alike. Lower palea keeled.

31. POA. Paleæ falling away together, the lower one 5-nerved, and with cobwebby hairs at the base. Spikelets 3–6-flowered.
32. ERAGROSTIS. Lower palea falling before the upper one, 3-nerved, not hairy.
33. DACTYLIS. Lower palea awn-pointed. Panicle contracted, composed of 1-sided clusters.

* * Grain adherent to the upper palea, downy at the apex.

34. FESTUCA. Lower palea entire, acute or awn-pointed.
35. BROMUS. Lower palea 2-cleft, awned between the teeth.

* * * Grain free, smooth. Lowest flowers of the spikelet imperfect.

36. UNIOLA. Spikelets broad and flat, many-flowered. Paleæ coriaceous.
37. PHRAGMITES. Spikelets 3–6-flowered, silky bearded on the rachis. Paleæ thin.

TRIBE V. **HORDEACEÆ.** — Spikelets 2–several-flowered, sessile, on opposite sides of the jointed rachis, spiked. Glumes 1–2, rarely wanting. Paleæ 2.

38. ELYMUS. Spikelets 2–4 at each joint of the rachis. Glumes 2, placed side by side before the spikelets.
39. GYMNOSTICHUM. Spikelets 2–3 at each joint of the rachis. Glumes none.
40. LOLIUM. Spikelet solitary at each joint of the rachis. Glume 1.

TRIBE VI. **AVENACEÆ.** — Spikelets panicled, 2–several-flowered, the terminal flowers mostly imperfect. Rachis or base of the flowers often bearded. Lower palea with a twisted, bent, or straight awn on the back, or below the apex.

41. AIRA. Spikelets 2-flowered. Lower palea thin, rounded on the back, awned below the middle.
42. TRISETUM. Spikelets 2–several-flowered. Lower palea thin, compressed-keeled, bearing a bent awn below the 2-cleft apex.
43. DANTHONIA. Spikelets 2–several-flowered. Lower palea rigid, many-nerved, bearing a flattened and twisted awn at the 2-cleft apex.
44. ARRHENATHERUM. Spikelets 2-flowered, the lower flower staminate, and bearing a long bent awn below the middle.

TRIBE VII. **PHALARIDEÆ.** — Spikelets in spike-like panicles, 3-flowered, the upper or middle flower perfect, the two lateral ones imperfect or mere rudiments. Glumes 2. Paleæ 2, indurated in fruit.

45. ANTHOXANTHUM. Lateral flowers neutral, each of one awned palea. Perfect flower diandrous.
46. PHALARIS. Lateral flowers rudimentary. Perfect flower triandrous.

TRIBE VIII. **PANICEÆ.** — Spikelets 2-flowered. Glumes 2, or the lower wanting. Lower flower imperfect, either staminate or neutral, with the lower palea membranaceous and similar to the upper glume, the upper one mostly wanting. Paleæ of the perfect flower coriaceous. Grain mostly grooved or flattened on the outside. Flowers in spikes or panicles.

* Lower glume and upper palea of the sterile flower wanting (the spikelet appearing like a single flower, with 2 glumes and 2 paleæ).

47. PASPALUM. Spikelets alike, plano-convex, in 1-sided spikes.

48. AMPHICARPUM. Spikelets of two kinds; one disposed in a terminal panicle, perfect but seldom fruiting; the other fruitful, on long solitary radical peduncles.

* * Glumes 2, the lower one often minute, rarely wanting.

49. PANICUM. Spikelets single, without a bristly or spiny involucre.
50. SETARIA. Spikelets crowded in spike-like panicles, subtended by a bristle-like involucre.
51. CENCHRUS. Spikelets single, or few in a cluster, enclosed in an indurated and spiny involucre. Spikelets spiked.
52. STENOTAPHRUM. Spikes and spikelets mostly as in Rottbœllia, but the flowers as in Panicum.

TRIBE IX. **ROTTBŒLLIACEÆ.** — Spikelets 1-2-flowered, by pairs, imbedded in an excavation of the thick and jointed rachis, one stalked and imperfect, the other sessile and perfect; or the upper spikelets all staminate and the lower pistillate. Lower glume coriaceous or cartilaginous. Paleæ awnless.

53. ROTTBŒLLIA. Spikelets 2 on each joint, one stalked and sterile, the other sessile and perfect.
54. MANISURIS. Spikelets 2 on each joint, the one at the top of the joint sterile, the other at the base globose and fertile.
55. TRIPSACUM. Upper spikelets by pairs, all staminate; the lower ones single, and pistillate.

TRIBE X. **ANDROPOGONEÆ.** — Spikelets 2-3 on each joint of the slender hairy or plumose rachis. Glumes more rigid than the thin-awned paleæ.

56. ANDROPOGON. Spikelets 2 on each joint of the plumose or hairy rachis, one sessile and perfect, the other stalked and imperfect or rudimentary.
57. ERIANTHUS. Spikelets 2 on each joint of the rachis, both fertile and surrounded by a hairy involucre.
58. SORGHUM. Spikelets panicled, 2-3 together, the lateral ones rudimentary.

1. LEERSIA, Swartz. FALSE RICE.

Perennial aquatic or marsh grasses, with the leaves and sheaths roughened with minute recurved points, the 1-flowered (whitish) spikelets crowded in 1-sided panicled racemes. Pedicels jointed. Glumes none. Paleæ 2, chartaceous, strongly compressed, fringed on the keel, the lower one much wider. Stamens 1-6. Stigmas 2. Grain compressed.

1. **L. oryzoides,** Swartz. Panicle large, diffuse; spikelets oblong, flat, loosely imbricated; stamens 3. — Ditches and swamps, Florida, and northward. July and Aug. — Culm 3°-4° long, commonly prostrate at the base. Leaves spreading. Base of the panicle mostly enclosed in the sheath of the subtending leaf. Spikelets strongly fringed, about 3″ long.

2. **L. Virginica,** Willd. Panicle nearly simple, the lower branches spreading; spikelets small, concave, sparingly fringed, closely imbricated; stamens 1-2. (L. imbricata, *Lam.?*) — Swamps and margins of streams, Florida, and northward. July and Aug. — More slender than the last, and with spikelets half as large.

3. **L. lenticularis,** Michx. Panicle diffuse; spikelets oval, flat, strongly fringed, closely imbricated; stamens 2. — Ponds and swamps, Florida to North Carolina, and westward. Aug. — Culm 2°-3° long. Leaves widely spreading, somewhat glaucous. Spikelets 3″ long.

4. **L. hexandra,** Swartz. Panicle contracted, erect, simple; spikelets lanceolate or oblong; stamens 6. — In lakes and ponds, often in deep water, Florida, and westward. July and Aug. — Culms slender, 1°–6° long, mostly branching. Leaves narrow, rather rigid. Panicle 2′–3′ long, exserted. Spikelets short-fringed, 2″ long, loosely imbricated.

2. ZIZANIA, Gronov. Wild Rice.

Rank water grasses, with broad flat leaves, and large diffuse panicles of monœcious 1-flowered spikelets, on club-shaped jointed pedicels. Glumes none, or reduced to a cup-shaped ring at the base of the spikelet. Paleæ 2, membranaceous, the lower one rough-awned in the pistillate spikelet. Stamens 6. Stigmas elongated, brush-shaped. Grain cylindrical, free.

1. **Z. aquatica,** L. Lower portion of the panicle staminate and widely spreading, the upper pistillate and erect, with straight branches; awn straight, elongated; styles 2; grain linear. — Deep marshes and ponds, Florida, and northward. July. — Culms 4°–8° high. Leaves rough beneath. Panicle 1°–2° long.

2. **Z. miliacea,** Michx. Panicle diffuse; staminate and pistillate spikelets intermixed; awns short; styles united, elongated; leaves smooth, with rough edges; grain oval. — With the preceding. April and May. — Culms 4°–6° high. Leaves somewhat glaucous.

3. HYDROCHLOA, Beauv.

A small floating or creeping grass, with short oblong-linear flat leaves, and simple spikes of small monœcious 1-flowered (white) spikelets, mostly included in the sheaths of the upper leaves. Spikelets 3–4 in a spike, the upper one staminate and exserted. Glumes none. Paleæ 2, hyaline, the lower one emarginate, the upper acute. Stamens 6. Styles 2: stigmas elongated. Grain ovoid, free.

1. **H. Carolinensis,** Beauv. (Zizania fluitans, *Michx.*) — Floating in still water or creeping on muddy banks, Florida to North Carolina. July and Aug. — Culm filiform, branching, ½°–2° long. Leaves 1′–2′ long.

4. ALOPECURUS, L. Foxtail Grass.

Flat-leaved grasses, with the 1-flowered spikelets closely crowded in a simple spike-like cylindrical panicle. Glumes 2, compressed, boat-shaped, sharply keeled, united below, awnless. Lower palea compressed, awned on the back below the middle, the upper wanting. Stamens 3. Styles 2, rarely united below. Grain free, smooth and lenticular.

1. **A. geniculatus,** L. Low; culms ascending, bent at the lower joints; awn longer than the obtuse hairy glume. — Wet cultivated grounds, Florida and northward. April. — Culms 6′–12′ high. Leaves 2′–4′ long, with the sheaths shorter than the joints. Spikes 1′–1½′ long.

The MEADOW FOXTAIL (A. pratensis, *L.*), a taller species (2°–3° high), with acute glumes, is scarcely spontaneous at the South. The same observation applies to the TIMOTHY or HERD'S-GRASS (Phleum pratense, *L.*), which differs from Alopecurus in having two paleæ and awned glumes.

5. SPOROBOLUS, Brown. DROP-SEED GRASS.

Tough wiry and tufted or creeping perennial grasses, with narrow leaves, and 1-flowered awnless spikelets, disposed in open, or crowded in spiked panicles. Glumes 2, membranaceous, unequal, the lower one shorter. Paleæ 2, mostly longer than the glumes, and of the same texture. Stamens 3. Styles 2. Grain oval or globose, loose in the thin membranaceous pericarp, deciduous. Panicles exserted.

** Panicles open.*

1. **S. junceus,** Kunth. (WIRE-GRASS.) Panicle narrow, the short and spreading branches whorled; spikelets on one side of the branches, short-stalked; glumes smooth, the upper one acute, 2–3 times longer than the lower, and about equal to the obtuse paleæ; culms (1°–2° high) erect; leaves chiefly radical, filiform and elongated, involute, those of the culm short and remote. (Agrostis juncea, *Michx.*) — Dry pine barrens, common. April and May, and often in October.

2. **S. Floridanus,** n. sp. Panicle diffuse, large; spikelets (purplish) on long hair-like stalks; glumes acute, the lower one barely shorter than the obtuse paleæ, the upper one a third longer; leaves rather rigid, flat, pungent, very rough on the edges. — Low pine barrens, Middle and West Florida. September. — Culm 2°–4° high. Leaves 1°–2° long. Panicle 1°–1½° long.

** * Panicles spiked.*

3. **S. Indicus,** Brown. Culms erect; panicle elongated, linear; leaves long, flat; paleæ twice as long as the glumes, the upper one truncated. (Agrostis Indica, *L.*) — Waste places, Florida to North Carolina. May–Sept. — Culms 2°–3° high. Leaves with bristle-like summits. Panicle 6′–18′ long, turning blackish. Spikelets crowded on the short appressed branches.

4. **S. Virginicus,** Kunth. Culms creeping, short-jointed, the short and mostly clustered branches erect; leaves 2-ranked, soon convolute, short and rigid; panicle small, lanceolate; glumes nearly equal, acute, rather longer than the paleæ. (Agrostis Virginica, *L.*) — Saline marshes and banks along the coast, Florida to North Carolina. July and Aug. — Flowering stems 6′–12′ high. Leaves 2′–4′ long. Panicle 1′–2′ long, pale or purple.

6. VILFA, Adans. RUSH-GRASS.

Panicles contracted or spiked, more or less included in the sheaths of the leaves. Grain oblong or linear, adherent to the closely investing pericarp. Otherwise as in Sporobolus.

1. **V. aspera,** Beauv. Perennial; culms tall and slender; leaves elongated, rough above, bristle-like at the summit; panicles partly included in the

upper sheaths; paleæ rough-hairy, unequal, awl-pointed, 2-3 times as long as the rough-keeled glumes and linear grain. (Agrostis aspera, *Michx.* A. clandestina, *Spreng.*) — Dry sandy soil, Florida, and northward. July and Aug. — Culms 2°-3° high. Sheaths hairy at the throat.

2. **V. vaginæflora,** Torr. Annual; culms low, clustered, bearing concealed panicles at every joint, the terminal one partly exserted; leaves short, smoothish; paleæ ovate, smooth, one third longer than the smooth glumes and oval grain. (Agrostis Virginica, *Muhl.* Crypsis Virginica, *Nutt.*) — Dry barren soil, North Carolina, and northward. September. — Culms 6′-12′ high. Leaves 2′-4′ long.

7. AGROSTIS, L. Bent-Grass.

Tufted usually tender grasses, with flat and narrow leaves; the small 1-flowered spikelets racemose on the hair-like clustered branches of the open panicle, on thickened pedicels. Glumes 2, nearly equal, longer than the paleæ. Paleæ 2, the lower one commonly awned on the back, 3-5-nerved, the upper 2-nerved, occasionally minute or wanting. Stamens 1-3. Styles or stigmas 2. Grain free.

§ 1. TRICHODIUM. *Upper palea minute or wanting, the lower awnless, shorter than the unequal acute rough-keeled glumes.*

1. **A. elata,** Trin. Culms stout, erect; leaves flat (1″-2″ wide); branches of the panicle flower-bearing above the middle. (A. dispar, *Michx.*?) — Swamps, North Carolina, *Curtis.* September. ♃ — Culms 2°-3° high. Panicles large and diffuse.

2. **A. perennans,** Gray. Culms slender, decumbent at the base; leaves flat (1″-2″ wide); branches of the panicle short, flower-bearing from below the middle; spikelets whitish. (T. perennans, *Ell.*) — Swamps and river-banks, Florida, and northward. July and Aug. ♃ — Culms 1°-2° high.

3. **A. scabra,** Willd. Culms slender, erect; leaves short; branches of the panicle long, hair-like, hispid, bearing the purple spikelets near their summits. (T. laxiflorum, *Ell.*) — Sterile soil, Florida, and northward. June and July. ☉ — Panicle usually as long as the culm.

§ 2. AGROSTIS Proper. *Upper palea manifest: the lower commonly awned on the back.*

4. **A. alba,** L. Culms ascending from a creeping base; panicle spreading in flower, contracted in fruit; glumes (whitish) nearly equal, rough-keeled; paleæ hairy at the base, the lower twice as long as the upper one, awnless or short-awned. — Damp soil, Florida, and northward. Introduced. — Culms 1°-3° long.

5. **A. rupestris,** All. Culms slender, erect; panicle small, oblong, with erect smooth branches; glumes lanceolate, nearly equal, rough-keeled; lower palea one third shorter than the glumes, short-awned below the middle, the upper one minute. — High mountains of North Carolina, and northward. July. — Culms 1° high.

6. **A. arachnoides,** Ell. Culms and leaves very slender; panicle contracted, weak and drooping; glumes nearly equal, lanceolate, rough on the keel and margins; upper palea minute, the lower with two minute bristles at the truncated apex, and a long and very fine awn on the back above the middle. — Near Orangeburg, South Carolina, *Elliott,* and westward. April and May. ♃ — Culms 1° high.

8. POLYPOGON, Desf. Beard-Grass.

Flat-leaved chiefly annual grasses, with the 1-flowered spikelets stalked, and crowded in close clusters into a terminal spiked panicle. Glumes 2, equal, awned, and much longer than the palcæ, of which the lower one is truncated and toothed at the apex, and often short-awned. Stamens 3. Stigmas 2. Grain elliptical, free.

1. **P. maritimus,** Willd. Culms simple (6′–8′ high); glumes pubescent, hispid on the keel, one third as long as the slender awns; lower palea 4-toothed, unawned. (Phleum pratense, *Ell., Herb.*) — Sea-shore of North and South Carolina. Introduced.

9. CINNA, L.

Tall perennial grasses, with broad leaves, bearing the 1-flowered compressed spikelets in a large compound terminal panicle. Glumes unequal, lanceolate, acute, the sharp keel hispid-serrulate. Palcæ 2, raised on a stalk, smooth, the lower one short-awned on the back below the apex. Stamen 1. Grain linear-oblong, free.

1. **C. arundinacea,** L. Culms (2°–7° high) simple; leaves linear-lanceolate (½′ wide); branches of the panicle in fours or fives, erect in fruit; spikelets often purplish (2½″–3″ long). — Shaded swamps, Georgia, and northward. — Panicle 6′–15′ long, rather dense. — Var. PENDULA, Gray. Culms and branches of the drooping panicle more slender; pedicels very rough; spikelets smaller; glumes and palcæ thinner. — Mountains of North Carolina, *Curtis.*

10. MUHLENBERGIA, Schreb. Drop-seed Grass.

Spikelets 1-flowered. Glumes persistent, pointed or awned, equal, or the lower one smaller. Palcæ 2, sessile in the glumes, commonly hairy at the base, deciduous with the enclosed grain; the lower one 3-nerved and mucronate or awned at the apex. Stamens 3.

§ 1. MUHLENBERGIA Proper. — *Spikelets commonly much crowded, in lateral and terminal panicles, short-stalked: culms branching: leaves flat.*

1. **M. Mexicana,** Trin. Panicles oblong, dense; glumes unequal, lanceolate, ending in slender hispid awn-like points, the upper one as long as the awnless palcæ. (Agrostis lateriflora, *Michx.*) — Damp soil, North Carolina, and northward. June and July. — Culms ascending, much branched.

2. **M. Willdenovii,** Trin. Culms sparingly branched, erect; panicles linear; spikelets scattered; palcæ twice as long as the nearly equal short-pointed

glumes, the lower one with an awn 3 – 4 times as long as the spikelet. (Agrostis tenuiflora, *Willd.*) — Dry rocky soil in the upper districts. July and Aug. — Culms 3° high.

3. **M. diffusa,** Schreb. Culms diffusely branched, low; panicles long and slender; glumes very small, the upper one truncated; awn of the palea twice as long as the spikelet. — Shaded waste places, Florida, and northward. Aug. and Sept. — Culms 1° – 1½° high.

§ 2. TRICHOCHLOA. — *Panicle terminal, diffuse: spikelets on long and hair-like stalks: culms tall and simple.*

4. **M. capillaris,** Kunth. Leaves rigid, elongated, convolute; panicle erect, the long and purple glossy branches and spikelets drooping; glumes nearly equal, half as long as the paleæ, the lower one awned; paleæ unequal, the upper one barely awned, the lower 3-awned, with the middle awn many times longer than the spikelet. — Varies with both glumes long-awned. (M. filipes, *Curtis.*) — Sandy soil along the coast, and sparingly in the interior, Florida, and northward. Aug. and Sept. — Culms 2° – 4° high.

5. **M. trichopodes.** Culms and leaves filiform, elongated; panicle erect, oblong; spikelets linear, on spreading stalks; paleæ twice as long as the nearly equal awnless glumes, ribbed; the lower one tipped with a short awn, and with the two lateral nerves slightly percurrent, hairy at the base. (Agrostis trichopodes, *Ell.* — Low pine barrens, Florida to North Carolina. Sept. ♃ — Culms 2° – 3° high. Panicle rarely purplish. Leaves flat.

11. BRACHYELYTRUM, Beauv.

A perennial erect grass, with a simple slender culm, flat lanceolate leaves, and a loose lanceolate simple panicle of large (½′ long) 1-flowered spikelets. Lower glume obsolete, the upper minute, persistent and awnless. Paleæ rigid, rough with short bristly hairs, the lower one concave, 5-ribbed, tapering into a long straight awn, and enclosing the shorter 2-pointed upper one. An awn-like pedicel of a second flower is applied to the back of the upper palea. Stamens and long stigmas 2. Grain linear.

1. **B. aristatum,** Beauv. (Muhlenbergia erecta, *Schreb.*) — Dry rocky places, Florida, and northward. July. — Culms solitary, 2° – 3° high.

12. CALAMAGROSTIS, Adans. Reed Bent-Grass.

Perennial grasses, with rigid erect simple culms, bearing a loose or contracted panicle of 1-flowered spikelets, with the hairy pedicel of a second flower at the back of the upper palea. Glumes 2, nearly equal, keeled, longer than the paleæ. Paleæ 2, bearded at the base with long hairs, the lower one awned on the back. Stamens 3. Grain free.

§ 1. CALAMAGROSTIS Proper. — *Glumes and paleæ membranaceous, the former boat-shaped: panicle open or loose.*

1. **C. coarctata,** Torr. Panicle contracted, lanceolate; glumes lanceolate, awl-pointed, rough-keeled, with a purple stripe near the margins; lower

palea 5-nerved, rough-keeled, about as long as the awn, much longer than the hairs at the base. — Swamps, North Carolina, and northward. Aug. and Sept. — Culms 2° – 3° high. Leaves somewhat glaucous. Panicle ½° long, purplish.

§ 2. AMMOPHILA. — *Glumes and paleæ somewhat coriaceous: panicle spike-like.*

2. **C. arenaria,** Roth. Culms and elongated convolute leaves rigid; panicle long (5′ – 9′), cylindrical; lower palea 5-nerved, obscurely awned, 3 times as long as the hairs at the base. — Sandy sea-shore, North Carolina, and northward. Aug. — Rootstock creeping. Culm 2° – 3° high. Spikelets, like the whole plant, whitish, ½′ long.

13. STIPA, L. Feather-Grass.

Perennial grasses, with convolute leaves, and loose panicles of 1-flowered spikelets, with very long awns. Glumes 2, membranaceous, nearly equal, awnless and persistent. Paleæ coriaceous, involute, raised on an obconical bearded stalk, the lower one with a twisted or contorted awn jointed with its apex. Stamens 3. Grain terete, enclosed in the paleæ.

1. **S. avenacea,** L. Culms (1° – 2° high) clustered; leaves narrowly linear, rough, the lowest elongated; awn pubescent, bent in the middle, many times longer than the dark-brown palea. — Dry soil, Florida, and northward. April.

14. STREPTACHNE, R. Brown.

Grasses with the habit of Aristida. Spikelet 1-flowered; flower stalked. Glumes 2, loose, awnless. Paleæ 2; the exterior cylindrical-involute. Awn terminal, simple, jointless, twisted below; the inner palea included, awnless. Stamens 3. Styles 2. Stigmas plumose.

1. **S.? Floridana,** n. sp. Culms (2° high) simple, slender, erect; leaves long, filiform, convolute, smooth; sheaths hairy at the throat; panicle (1° long) narrow, erect, the rough branches by pairs, scattered; spikelets short-stalked; glumes equal, linear, purple, 1-nerved, the lower one awn-pointed, hispid-serrulate on the back, the upper smooth, truncated, mucronate-awned; paleæ raised on a slender bearded stalk, smooth, shorter than the glumes; the lower one linear-subulate, gradually tapering into the long compressed curved awn, convolute, and enclosing the capillary inner one. — South Florida, *Dr. Blodgett.*

15. ARISTIDA, L. Wire-Grass.

Dry and harsh perennial grasses, growing in barren soil, with narrow leaves, racemose or spiked-panicled 1-flowered spikelets nearly as in Stipa, but the lower palea ending in a triple awn, which is continuous with its apex (except in No. 9). Upper palea minute. Grain linear.

* *Glumes unequal, the upper one shorter.*

1. **A. lanata,** Poir. Culms stout (2° – 3° high), simple; leaves flat, rough on the upper side, the sheaths, like the axils of the loose panicle, woolly; lower palea (4″ long) as long as the upper glume and lateral awns, and one half as

long as the middle one. — Dry pine barrens, Florida to North Carolina. July and Aug. — Lower palea spotted with purple.

2. **A. purpurascens,** Poir. Culms (1½° – 2° high) slender, sparingly branched; sheaths smooth; glumes sometimes nearly equal, purple; lower palea (3″ long) ½ – ⅔ as long as the nearly equal awns. — Dry soil, Florida, and northward. Aug. — Panicle slender, 1° long, with the branches appressed.

** * Glumes equal, or the upper one longer.*

3. **A. gracilis,** Ell. Culms much branched at the base, very slender; leaves flat; panicle very narrow, with distant appressed branches; middle awn rather longer than the rough and spotted lower palea, the lateral ones much shorter; glumes nearly equal. — Dry gravelly soil, Florida to North Carolina. Aug. — Culms (with the panicle) 6′ – 12′ high. Spikelets purple.

4. **A. virgata,** Trin. Culms (2° – 3° high) branched near the base; leaves flat, rigid; panicles (1° long) loose; glumes nearly equal; middle awn spreading, twice as long as the erect lateral ones, and four times the length of the short (2″ long) lower palea. — Dry soil, Florida to North Carolina.

Var? **palustris.** Every way larger (3° – 5° high), with the panicle 1½° – 2½° long, and the straight awns nearly equal. — Margins of pine-barren ponds, West Florida. Aug. and Sept.

5. **A. stricta,** Michx. Culms (2° – 3° high) tufted, simple, straight; leaves chiefly radical, filiform, involute, rigid, hairy at the base; panicle (1° long) spiked; lateral awns as long as the lower palea, the middle one one third longer. — Dry sandy ridges in the pine barrens, very common. June and July.

6. **A. dichotoma,** Michx. Culms low, fork-branched; leaves filiform, erect; panicle (2′ – 3′ long) spiked; glumes purple, longer than the paleæ and the very short and erect lateral awns, the middle awn shorter than the paleæ, spreading. — Dry soil in the upper districts. Aug. and Sept. — Culms 6′ – 12′ high.

7. **A. spiciformis,** Ell. Culms simple, rigid, erect (1° – 1½° high); leaves rigid, erect, convolute, smooth; panicle spiked; glumes much shorter than the long (1′) very slender paleæ, the upper one twice as long as the lower; awns nearly equal, widely spreading, the middle one as long as the paleæ. — Low pine barrens, Florida to South Carolina. Aug. and Sept. — Panicles 2′ – 4′ long, at length twisted.

8. **A. oligantha,** Michx. Culms (1° – 2° high) branched, slender; leaves filiform, convolute; spikelets scattered, single or by pairs, in a simple terminal raceme; glumes nearly equal, longer than the paleæ; middle awn very long (2′), rather longer than the lateral ones, and 2 – 3 times the length of the paleæ. — South Carolina or Georgia, *Nuttall.* Sept.

9. **A. tuberculosa,** Nutt. Culms rigid, branching (1° – 1½° high); leaves flat; glumes nearly equal, longer than the paleæ, bristle-awned; awns (2′ long) equal, jointed with the paleæ, twisted below, then widely spreading, several times longer than the palea. — Dry ridges, in the middle districts of Georgia. Sept. — Panicle simple.

16. SPARTINA, Schreb. Marsh-Grass.

Rigid perennial grasses, growing chiefly in saline marshes, with simple culms, concave or convolute leaves, and flattened 1-flowered spikelets, closely imbricated in two rows on one side of the triangular rachis, forming appressed or spreading alternate spikes. Glumes 2, unequal, acute or short-awned, commonly bristly-serrulate on the keel; the upper mostly longer than the unequal awnless palæ. Stamens 1 – 3. Styles long, united below, or nearly distinct. Grain free.

** Leaves convolute, rush-like.*

1. **S. juncea,** Willd. Spikes 3 – 9, remote, erect; glumes hispid-serrulate on the keel, the upper 2 – 3 times longer than the lower one; lower palea, and sometimes the upper also, rough above. — Sandy or marshy places along the coast, Florida, and northward. July and Aug. — Culms 1° – 3° high. Leaves pungent. Spikes 1′ – 2′ long. Stamens 1 – 3.

2. **S. gracilis,** Hook. Spikes 15 – 30, closely imbricated in a cylindrical spike, the lowest rather distinct; glumes hispid on the back, the upper one third longer than the lower one, obtuse, mucronate; paleæ obtuse, the lower rough on the back, the upper smooth. — Sandy saline swamps, West Florida. July and Aug. — Culms (1° – 2° high) and rush-like leaves very rigid. Common spike 4′ – 6′ long. Proper spikes 4″ – 6″ long.

** * Leaves concave or flat.*

3. **S. polystachya,** Willd. Spikes numerous, spreading; upper glume and nearly equal paleæ slightly roughened, 2 – 3 times longer than the lower one; leaves broad ($\frac{1}{2}$′ – 1$\frac{1}{2}$′), concave, very rough on the margins. — Brackish marshes, Florida to North Carolina. Aug. and Sept. — Culms stout, 4° – 8° high. Spikes 2′ – 3′ long, racemed.

4. **S. glabra,** Muhl. Spikes numerous, appressed to the common rachis; upper glume linear, obtuse, 3 times the length of the lower one, and, like the paleæ, very smooth; leaves concave, smooth on the margins. — Salt marshes, Florida, and northward. Aug. and Sept. — Culms 2° – 4° high. Leaves narrower than the last, elongated.

17. GYMNOPOGON, Beauv.

Low perennial grasses, with short and crowded distichous spreading leaves. Spikelets appressed, scattered on the straight and at length reflexed branches of the simple panicle, consisting of one perfect flower, and the awn-like pedicel of a second flower above. Glumes 2, subulate, hispid-serrulate. Paleæ 2, shorter than the glumes, the lower one awned under the apex. Stamens 3.

1. **G. racemosus,** Beauv. Culms (1° high) rigid; leaves lanceolate (1$\frac{1}{2}$′ – 2′ long); branches of the panicle bearing the linear spikelets from the base to the summit; awn 2 – 3 times the length of the paleæ and the pedicel of the sterile flower. (Andropogon ambiguus, *Michx.*) — Var. FILIFORMIS has narrower leaves, the spikelets borne above the middle of the branches, and the awns and sterile pedicel shorter than the paleæ. — Dry sandy soil, Florida, and northward. Sept. and Oct.

18. EUSTACHYS, Desv.

Chiefly tropical grasses, with compressed culms and sheaths, distichous flat or folded obtuse leaves, and digitate rarely single spikes. Spikelets 2 – 3-flowered, imbricated or crowded in 2 rows on one side of the triangular rachis; the lowest flower perfect and sessile, the upper ones staminate or neutral, and stalked. Glumes 2, membranaceous, persistent, the upper (exterior) one short-awned. Paleæ coriaceous, the lower one boat-shaped, mucronate-awned under the apex, the upper (mostly wanting in the sterile flowers) unawned. Stamens 3. Grain free.

1. **E. petræa,** Desv. Culms (1° – 2° high) clustered, erect; leaves glaucous; spikes 3 – 5; spikelets 2-flowered; glumes hispid, the upper oblong, deeply emarginate; lower palea dark brown, hairy on the keel and margins, bearded at the base; sterile flower neutral, club-shaped, awnless. — Damp soil along the coast, Florida to North Carolina. May – Aug. ♃ — Leaves 3′ – 5′ long. Spikes erect. Spikelets roundish.

2. **E. glauca,** n. sp. Culms stout (3° – 5° high), and, like the broad (6″ – 8″ long) leaves, smooth and glaucous; spikes about 20; spikelets roundish, 2-flowered; glumes hispid, the upper lanceolate, entire; paleæ dark brown, smooth; upper flower obovate, short-awned. — Brackish marshes, West Florida, Aug. and Sept. ⓘ — Culms ½′ wide at the base. Leaves 1½° – 2° long.

3. **E. Floridana,** n. sp. Culms slender (2° high); leaves (2′ – 4′ long) glaucous; spikes single or by pairs; spikelets light brown, 3-flowered, the middle flower staminate; glumes smoothish, truncate, oblong; lower palea of the perfect flower hairy on the keel and margins, distinctly awned; sterile flowers obovate, smooth, the lower one short-awned. — Dry pine barrens, Middle Florida. July – Sept. ♃ — Spikelets larger than in the two preceding.

19. CYNODON, Richard. BERMUDA-GRASS.

Diffusely creeping grasses, with short and erect flowering stems, and flat leaves. Spikes digitate, 1-sided. Spikelets crowded, awnless, 2-flowered; the lower flower perfect, the upper an awn-like pedicel. Glumes 2, membranaceous, nearly equal. Paleæ 2, membranaceous, the lower one larger and keeled. Stamens 3. Grain free.

1. **C. Dactylon,** Pers. Spikes 3 – 5, filiform, purple; glumes rough-keeled; paleæ longer than the glumes, the lower one boat-shaped, and hairy on the keel; anthers and stigmas purple. (Digitaria Dactylon, *Ell.*) — Waste places. Introduced. — Culms perennial. Leaves 2′ – 4′ long. Spikes 1′ – 2′ long, filiform.

20. CTENIUM, Panz.

Flat-leaved grasses, with the erect culms terminated by a single falcate spike. Spikelets 4 – 5-flowered, crowded in two rows on the lower side of the flattened rachis; the two lower sterile, of 1 – 2 paleæ which are awned under the apex, and similar to the third perfect one; the upper ones (1 – 2) abortive and awn-

less. Glumes 2, membranaceous, very unequal; the larger upper one with a spreading awn or tubercle on the back. Paleæ of the perfect flower membranaceous; the lower one awned below the apex, and densely ciliate on the margins. Stamens 3. Ovary smooth. Styles terminal: stigmas elongated, plumose, with simple hairs. Grain free.

1. **C. Americanum,** Spreng. Root pungent; culm (2° – 3° high) rough, like the narrow leaves; spike at length recurved or coiled (3′ – 4′ long); upper glume granular on the back; the stout awn spreading horizontally. (Monocera aromatica, *Ell.*) — Low pine barrens, Florida to North Carolina. July and Aug. ↳.

21. DACTYLOCTENIUM, Willd. Crowfoot-Grass.

Annual creeping or spreading branching grasses, with flat leaves and digitate rarely single spikes. Spikelets 2 – several-flowered, crowded on one side of the flattened rachis; the uppermost flower imperfect. Glumes 2, compressed-keeled, membranaceous; the upper (exterior) awn-pointed. Paleæ 2, boat-shaped, pointed. Stamens 3. Stigmas plumose, with branching hairs. Grain roundish, rugose, free.

1. **D. Ægyptiacum,** Willd. Culms ascending from a creeping base; leaves fringed; spikes commonly 4, awn-pointed; spikelets 3-flowered. (Eleusine? cruciata, *Ell.*) — Cultivated ground, common. Introduced. — Culms numerous, 1° high. Spikes 1′ – 2′ long.

22. ELEUSINE, Gært.

Characters chiefly of Dactyloctenium, but the narrower glumes and paleæ obtuse and awnless. Stigmas plumose, with simple hairs. Spikelets closely imbricated. — Low annuals.

1. **E. Indica,** Gært. — Cultivated ground, very common. Introduced. Culms (6′ – 18′ high) flattened; leaves flat; spikes 2 – several, the lower ones sometimes scattered (2′ – 4′ long); spikelets 6-flowered.

23. LEPTOCHLOA, Beauv.

Flat-leaved grasses, with the numerous spikes disposed in a terminal raceme. Spikelets sessile, loose on one side of the elongated filiform rachis, 3 – many-flowered. Glumes 2, membranaceous, unequal, keeled. Paleæ 2, membranaceous; the lower one longer than the upper, 3-nerved, awned or unawned. Stamens 3. Grain oblong, free.

§ 1. LEPTOCHLOA Proper. — *Lower palea unawned.*

1. **L. mucronata,** Kunth. Culms 2° – 3° high; sheaths of the broad (4″ – 6″ wide) rough leaves hairy; spikes numerous, in an elongated raceme, 2′ – 4′ long, spreading; spikelets minute, 3 – 4-flowered; glumes mucronate, longer or shorter than the flowers; lower palea smooth, emarginate. (Eleusine mucronata, *Michx.*) — Cultivated fields, Florida, and northward. Aug. – Sept. ①

2. **L. dubia,** Nees. Culms 2° high, slender; leaves elongated, filiform, with smooth sheaths; spikes 6 – 10, somewhat corymbose; spikelets distant on the filiform rachis, 6-flowered; glumes lanceolate, nearly equal, serrulate on the keel, shorter than the awnless soon spreading flowers; palæ fringed on the margins, the lower one truncate or emarginate. — South Florida.

§ 2. DIPLACHNE. — *Lower palea 2-cleft, 1 – 3-awned.*

3. **L. polystachya,** Kunth. Culms ½° – 4° long, mostly prostrate and rooting at the lower joints, much branched; raceme partly included in the sheaths of the elongated leaves; spikes numerous, approximate, erect, 3′ – 5′ long; spikelets lanceolate, 8 – 10-flowered; glumes unequal, shorter than the flowers; lower palea hairy on the margins below, 3-awned; the lateral awns minute, the middle one about as long as the palea. (Festuca polystachya, *Michx.*) — Brackish swamps along the coast, Florida, and northward. Sept. ①

4. **L. Domingensis,** Link.? Culms erect, simple, straight and slender; leaves narrowly linear or filiform, shorter than the culm; spikes 6 – 12, scattered, exserted; spikelets lanceolate, 6 – 8-flowered; glumes unequal, acute, rough-keeled; lower palea hairy on the margins, much longer than the single rough awn. — South Florida. Oct. — Culms 1° – 1½° high.

24. TRICUSPIS, Beauv.

Perennial grasses, with tall, erect, simple culms, from a thick and scaly root-stock, elongated rigid leaves, and ovate or lanceolate 5 – 7-flowered stalked spikelets, disposed in a simple or compound open panicle. Glumes 2, smooth, emarginate, shorter than the crowded flowers. Paleæ 2, 2-cleft, the lower one shortly 3-awned by the percurrent hairy nerves, bearded at the base. Stamens 3. Grain obovate-oblong, free.

1. **T. sesslerioides,** Torr. Panicle ample and diffuse, or contracted and erect, bearded in the axils; spikelets terete, lanceolate, mostly purple; lower palea with two awn-like teeth similar to the three short awns. (Poa quinquifida, *Pursh.*) — Dry soil, Florida, and northward. Aug. and Sept. — Culms 3° – 5° high. Sheaths often hairy.

2. **T. ambigua.** Panicle short, nearly simple, spreading, smooth in the axils, clammy; spikes ovate or roundish, compressed; teeth of the lower palea obtuse, wider than the three short awns. (Poa ambigua, *Ell.*) — Low pine barrens, Florida to South Carolina. August. — Culms 2° – 3° high.

25. TRIPLASIS, Beauv.

Low tufted fibrous-rooted grasses, with branching culms, linear-subulate leaves, and few 4-flowered purple spikelets, disposed in reduced lateral and terminal panicles. Flowers scattered on the slender rachis. Glumes 2, lanceolate, smooth. Paleæ 2, hairy on the margins; the lower one 2-cleft, with a bearded or plumose awn between the teeth; the upper concave, 3-toothed. Stamens 3. Grain free.

1. **T. Americana,** Beauv. Culms erect, 1° – 1½° high; leaves and sheaths hairy; lateral panicles included; awn of the lower palea plumose, much longer

than the awn-pointed teeth. (Uralepis cornuta, *Ell.*) — Dry sandy soil, Florida to North Carolina. Aug. and Sept. ♃.

2. **T. purpurea.** Culms procumbent or ascending, 1° – 1½° long; leaves and sheaths smooth or roughish; lateral panicles included; awn of the lower palea bearded, about as long as the obtuse teeth, and much shorter than the palcæ. (Aira, *Ell.* Uralepis purpurea, *Nutt.*) — Drifting sands along the coast, Florida, and northward. Aug. – Oct. — Leaves 1′ – 4′ long. Spikelets bright purple.

26. EATONIA, Raf.

Slender erect and tufted grasses, with narrow leaves, and small smooth (not hairy) spikelets of pale flowers in a racemose or spicate panicle. Spikelets awnless, 2 – 5-flowered, the uppermost flower usually an awn-like pedicel. Glumes membranaceous, shorter than the flowers; the lower one linear and 1-nerved; the upper obovate, 3-nerved. Palcæ unequal, the lower one obtuse. Stamens 3. Grain linear-oblong.

1. **E. obtusata,** Gray. Panicle dense, spike-like, the 2-flowered spikelets much crowded on the short erect branches; glumes rough on the back, the upper one round-obovate, somewhat truncate, rather rigid; lower palea lanceolate-oblong, obtuse, rough-keeled. (Aira obtusata, *Michx.*) — Dry soil, Florida, and northward. April and May. ♃ and ① — Culms 1° – 2° high.

2. **E. Pennsylvanica,** Gray. Panicle slender, loose, the 2 – 3-flowered spikelets scattered on the slender branches; glumes slightly roughened on the back, the upper one obovate, obtuse, or abruptly short-pointed; lower palea obtuse; leaves flat, with the sheaths smooth, rough, or soft-downy. (Aira mollis, *Ell.*) — Upper districts. April. ♃ — Culms 1° – 2° high.

Var.? **filiformis.** Culms 1° high, very slender, barely longer than the filiform involute leaves; panicle linear, loose; spikelets scattered, mostly 3-flowered, the flowers distant on the rachis, the lowest one and glumes nearly smooth. (Aira mollis, var. *Ell.*) — Dry pine barrens, Florida to South Carolina. March.

27. MELICA, L.

Perennial grasses, with flat leaves, and 3 – 5-flowered spikelets of large flowers in a simple panicle. Flowers awnless, the upper ones imperfect. Glumes membranaceous, unequal, convex, obtuse, scarious on the margins, many-nerved. Palcæ similar to the glumes; the upper one smaller, concave on the back. Stamens 3. Grain free.

1. **M. mutica,** Walt. Culms 1° – 2° high; leaves and sheaths smooth or rough-pubescent; panicle loose, of few nodding racemose spikelets; upper flowers imperfect, truncate-obovate; palea roughish. (M. glabra, *Michx.*) — Dry open woods, Florida, and northward. April.

28. GLYCERIA, Brown.

Smooth perennial marsh or water grasses, with flat leaves, nearly entire sheaths, and terete or tumid many-flowered spikelets disposed in a simple or compound

panicle. Rachis jointed. Glumes membranaceous, obtuse, persistent. Paleæ nearly equal, somewhat chartaceous, obtuse, early falling away with the separating joints of the rachis; the lower one naked, convex, 7-nerved. Stamens 2 – 3. Grain free, oblong.

1. **G. nervata,** Trin. Culms erect; panicle diffuse, the capillary branches at length drooping; spikelets purplish, very numerous, ovate-oblong, 5 – 6-flowered, nearly terete; lower palea oblong, obtuse, 7-nerved. (Poa parviflora, *Pursh.*) —Wet swamps, West Florida, and northward. July. — Culms 2° – 3° high. Spikelets 2″ long.

2. **G. pallida,** Trin. Culms erect or ascending; panicle narrow, nearly simple, with the capillary branches erect; spikelets pale, oblong-linear, 5 – 9-flowered, nearly terete; lower palea oblong, minutely 5-toothed, 7-nerved. — Shallow water, North Carolina, and northward. July. — Culms 1° – 3° long. Spikelets $\frac{1}{2}'$ long.

3. **G. fluitans,** R. Brown. Culms thick, ascending from a creeping base; leaves long, broadly linear; panicle long, narrow, racemose; spikelets linear, terete, pale, loosely 7 – 13-flowered (1′ long); lower palea obtuse, or slightly 3-lobed at the scarious apex, roughish, 7-nerved. (Poa fluitans, *Ell.*) — Shallow water in the upper districts, and northward. June and July. — Culms 1° – 5° long. Panicle 1° long.

4. **G. rigida,** Smith. Culms low (2′ – 4′ high), ascending, rigid; leaves subulate, $\frac{1}{2}'$ – $1\frac{1}{2}'$ long, involute and rigid when dry; panicle 1′ – $1\frac{1}{2}'$ long, lanceolate, dense, 1-sided; spikelets linear, acute, 5 – 11-flowered, short-pedicelled; glumes serrulate on the keel; paleæ obtuse, emarginate or mucronate. (Poa rigida, *L.*) — Dry soils, around Beaufort, South Carolina, *Elliott.* April and May.

29. ARUNDINARIA, Michx. Cane or Reed.

Tall woody grasses, with clustered spreading branches, broad and flat persistent leaves, and racemose or panicled many-flowered spikelets. Glumes unequal, concave, membranaceous, awn-pointed. Paleæ rather loosely imbricated on the bearded and jointed rachis, nearly equal; the lowest one ovate-lanceolate, concave, many-nerved, awn-pointed; the upper strongly 2-keeled. Stamens 3. Stigmas 3. Grain oblong, free.

1. **A. gigantea.** (Cane.) Culms arborescent, 10° – 20° high, rigid, simple the first year, branching the second, afterwards at indefinite periods fruiting, and soon after decaying; leaves lanceolate (1′ – 2′ wide), acuminate, smoothish; panicles lateral, composed of few simple racemes; spikelets purple, erect; lower palea lanceolate-ovate, pubescent, fringed (8″ long), awn-pointed. (Arundinaria macrosperma, *Michx.*) — Banks of the larger rivers, Florida to North Carolina. February.

2. **A. tecta,** Muhl. (Reed.) Culms slender, 2° – 10° high, branching; leaves linear-lanceolate, acuminate, roughish, the sheaths bearded at the throat; spikelets solitary, or in a simple raceme at the summit of the branches, or frequently

on leafless radical culms; lower palea (6″ long) ovate-lanceolate, smooth, fringed on the margins, awn-pointed. (Arundo tecta, *Walt.*) — Swamps, Florida to North Carolina. Feb. and March.

30. BRIZOPYRUM, Link.

A low and rigid perennial diœcious grass, growing in saline marshes, with linear-subulate involute distichous leaves, and many-flowered compressed spikelets, crowded in a nearly simple spike. Glumes and paleæ smooth, somewhat coriaceous, obtuse, compressed, not keeled; the lower ones several-nerved. Stamens 3. Stigmas 2. Grain oblong, free.

1. **B. spicatum,** Hook. Rootstocks long and creeping; culms 1° high; leaves spreading, rigid, 2′ – 4′ long, smooth, like the imbricated sheaths; spikelets oblong, 7 – 15-flowered. (Uniola spicata, *Ell.*) — Low sandy shores and marshes, West Florida, and northward. Aug. and Sept.

31. POA, L. Meadow-Grass.

Grasses with tufted culms, smooth flat and tender leaves, and compressed few-flowered spikelets in loose or contracted panicles. Glumes unequal, shorter than the flowers. Lower palea nearly membranaceous, keeled, scarious on the margins, awnless, 5-nerved, the three more prominent nerves mostly hairy or woolly below; upper palea 2-toothed, falling at maturity with the lower one. Stamens 2 – 3. Stigmas plumose. Grain free.

** Branches of the panicle single, or by pairs.*

1. **P. annua,** L. Annual; culms tender, spreading, 6 – 10′ high; leaves linear, 3′ – 6′ long, 1½″ wide; panicle ovate, the smooth branches at length reflexed; spikelets ovate, about 5-flowered; glumes obtuse or emarginate, half as long as the sparsely hairy obtuse flowers. — Yards and gardens, Florida, and northward. Feb. and March. Introduced.

2. **P. cristata,** Walt. ? Annual; culms erect, 6′ – 10′ high; leaves linear, subulate, 1′ long, ½″ wide; panicle linear or lanceolate, dense, the lowest of the rough branches spreading; spikelets 3 – 5-flowered; lower palea with a prominent crest-like fringe on the back, barely longer than the acute glumes. — Dry soil around Quincy, Middle Florida. April.

3. **P. flexuosa,** Muhl. Perennial; culms weak, mostly erect, 1° – 1½° high; leaves narrowly linear; branches of the panicle by pairs (1½′ – 2′ long), capillary, widely spreading; spikelets 2 – 4 near the summit of each branch, pale, oblong, 3 – 4-flowered; glumes acute; lower palea compressed and very obtuse at the apex, hairy on the nerves. (P. autumnalis, *Ell.*) — Rich shaded soil, Florida, and northward. May.

*** Branches of the panicle* 3 – 6 *in a cluster: perennials.*

4. **P. pratensis,** L. Culms terete, ascending from a creeping base; leaves mostly abruptly pointed; branches of the panicle expanding, about 5 in a cluster; spikelets ovate, 3 – 5-flowered, crowded; flowers closely imbricated; lower

palea acutish, strongly nerved, hairy. (P. viridis and P. angustifolia, *Ell.*) — Rich soil, mostly around dwellings. Introduced. May. — Culm 1° – 2° high.

5. **P. compressa,** L. Culms ascending from a creeping base, geniculate, and, like the sheaths, compressed; panicle contracted, 1-sided, the short erect branches 2 – 4 in a cluster; spikelets 4 – 8-flowered; lower palea rather obtuse, hairy below, faintly nerved. — With the preceding. May. — Culms 1° high. Leaves bluish green.

32. ERAGROSTIS, Beauv.

Spikelets few – many-flowered, compressed. Lower palea 3-nerved, not hairy nor woolly; the upper one remaining after the rest of the flower has fallen. Otherwise as in Poa. — Culms often branched. Leaves and sheaths smooth or hairy.

** Culms prostrate and creeping, diffusely branched.*

1. **E. reptans,** Nees. Culms filiform, the flowering branches erect (4′ – 6′ high), leaves short (1′ – 2′ long), linear; sheaths downy at the base; panicle small (2′ – 3′ long), ovate or oblong, often contracted; spikelets linear, 10 – 30-flowered, nearly sessile, imperfectly diœcious; paleæ acute. (Poa reptans, *Michx.*) — Low sandy places, Florida, and northward. Aug. and Sept. ① — Plant pale green.

*** Culms branching, erect or ascending: annuals.*

2. **E. megastachya,** Link. Culms prostrate and geniculate at the base, ascending; leaves linear; sheaths smooth; panicle oblong or pyramidal, contracted or spreading; spikelets oblong or at length linear (3″ – 5″ long), 10 – 30-flowered, often lead-color; lower palea ovate, obtuse. (Briza Eragrostis, *L.*) — Cultivated or waste grounds, Florida, and northward. July and Aug.

3. **E. ciliaris,** Link. Culms slender, prostrate or ascending, geniculate; leaves (2′ – 3′ long) linear, smooth; sheaths smooth, bearded at the throat; panicle spiked, cylindrical, the minute (½″ long) ovate spikelets densely crowded on the short appressed branches, 5 – 7-flowered; lower palea obtuse, mucronate, rough or ciliate on the back; the upper one fringed on the margins with long bristly hairs. — Varies with the culms nearly erect, open lanceolate or oblong panicle, distinct pale spikelets, and flowers more scattered on the smooth rachis. — Waste places and along roads, Florida to South Carolina; the var. at Key West. — Culms 6′ – 12′ long. Spikelets purple.

4. **E. Purshii,** Schrad. Culms slender, ascending, geniculate near the base, 6′ – 12′ long; leaves narrowly linear, with the sheaths bearded at the throat; panicle 3′ – 6′ long, the lowest of the widely spreading branches whorled; spikelets linear, 5 – 10-flowered, purple or pale, the lateral ones appressed, and mostly longer than their pedicels; lower palea ovate, 3-nerved. (Poa pectinata, and P. tenella, *of authors.*) — Waste places and cultivated grounds, common. June – Sept.

5. **E. conferta,** Trin. Culms erect, stout, 2° – 3° high; leaves linear; sheaths smooth; panicle elongated (1° – 2° long), linear or lanceolate, the very numerous clustered branches and small oblong 8 – 10-flowered spikelets erect or

appressed; flowers minute, membranaceous, rather distant on the rachis; lower palea obtuse, 3-nerved. (Poa conferta, *Ell.*) — River-banks, Florida to South Carolina. Aug. and Sept. — Panicle whitish. Spikelets 1″ - 1½″ long.

* * * *Culms simple, erect, shorter than the large and spreading panicle.*

6. **E. tenuis,** Gray. "Panicle virgately elongated (1° - 2½° long), very loose, the spreading branches bearded in some of the lower axils, their remote divisions and long diverging pedicels capillary; spikelets 2 - 6- (sometimes 7 - 12-) flowered, pale or greenish; glumes lanceolate or awl-shaped, very acute (1½″ - 2″ long), membranaceous, as are the oblong-lanceolate acute flowers; lower palea distinctly 3-nerved; the upper, ciliate-scabrous." *Gray.* (Poa tenuis, *Ell.*) — Greenville, South Carolina, *Elliott;* North Carolina, *Curtis.* Aug. and Sept. ↳ ? — Leaves (1½° - 2° long) and sheaths smooth or hairy.

7. **E. capillaris,** Nees. Panicle widely expanding, the lower axils mostly bearded; spikelets very small (1″ - 1½″ long), 2 - 4-flowered, mostly purple, on long diverging capillary pedicels; glumes and flowers ovate, acute; lower palea obscurely 3-nerved. (Poa, *L.* P. hirsuta, *Michx.*) — Dry uncultivated fields, Florida, and northward. Aug. and Sept. — Leaves and sheaths smooth or hairy. Panicle 1° - 2° long.

8. **E. nitida.** Panicle (1½° - 3° long) reclining, the bristle-like or capillary branches erect-spreading, naked in the axils; spikelets linear, flat (3″ - 4″ long), 8 - 12-flowered, on erect-spreading pedicels 1′ - 2′ long; lower palea acute, 3-nerved, nearly smooth on the keel; leaves and sheaths very smooth and shining. (Poa nitida, *Ell.*) — Low grassy places along the coast, West Florida to South Carolina. Aug. and Sept. ↳ — Leaves narrowly linear, longer than the short (6′ - 9′ high) culm.

9. **E. pectinacea,** Gray. Panicle erect, widely spreading, or the rather rigid and hairy branches at length reflexed; spikelets purple, flat, about 8-flowered, shorter than the erect or slightly spreading pedicels; lower palea ovate, acute, strongly 3-nerved, rough-keeled. (Poa pectinacea, *Michx.* P. hirsuta, *Ell., &c.*, not of *Michx.*) — Dry sterile soil, Florida, and northward. Aug. and Sept. — Panicle 1° - 1½° long. Leaves and sheaths mostly clothed with long soft hairs.

Var. **refracta.** Smooth throughout, or the sheaths of the short and rigid leaves bearded at the throat; panicle (6′ - 12′ long) with the branches reflexed; spikelets sessile or nearly so, 15 - 20-flowered; lower palea faintly 3-nerved. (Poa refracta, *Ell.*) — Damp soil, Florida to North Carolina. — Spikelets about 5″ long.

33. DACTYLIS, L. Orchard-Grass.

Perennial grasses, with simple culms, keeled leaves, and 2 - 7-flowered spikelets crowded in a 1-sided glomerate panicle. Glumes and lower palea herbaceous, keeled, awn-pointed, rough-ciliate on the keel, the latter 5-nerved. Stamens 3. Grain free.

1. **D. glomerata,** L. — Near Charleston, *Elliott,* and northward. Introduced. May and June. — Culms 2° - 3° high. Leaves and sheaths scabrous.

Spikelets in close clusters at the end of the short branches, 2 – 4-flowered. Glumes and flowers lanceolate.

34. FESTUCA, L. Fescue-Grass.

Grasses with flat or setaceous leaves, and panicled 3 – many-flowered mostly awned spikelets. Rachis jointed as in Glyceria. Glumes unequal, mostly keeled. Palæ nearly coriaceous; the lower one naked, rounded on the back, 3 – 5-nerved, acute or bristle-awned; the upper commonly adhering at maturity to the enclosed grain. Stamens 1 – 3.

** Flowers awned: panicle contracted: annuals.*

1. **F. Myurus,** L. Culms erect, very slender, concealed in the sheaths of the bristle-like leaves; panicle elongated, linear, 1-sided, partly included in the sheath of the uppermost leaf, the scattered branches appressed; spikelets compressed, 6-flowered; awn 3 – 4 times the length of the subulate sparsely hairy palea. Stamen 1. — Dry sandy soil, Florida to North Carolina. March and April. — Culms 6′ – 12′ high. Panicle pale, 4′ – 6′ long.

2. **F. tenella,** Willd. Culms (2′ – 12′ high) erect or ascending; leaves narrowly linear or filiform; panicle long-peduncled, simple, spiked, or the branches slightly spreading, mostly purple; spikelets crowded, compressed, oblong, 8 – 12-flowered; awn not longer than the subulate hispid palea. — Dry sandy soil, Florida, and northward. Feb. – April.

3. **F. duriuscula,** L. Culms erect, 1° – 1½° high; leaves filiform; panicle simple, 1-sided, mostly bending, spreading; spikelets oblong, about 6-flowered; awn shorter than the smooth lanceolate palea. — Around dwellings, Florida, and northward. Introduced. April – May.

4. **F. parviflora,** Ell. "Panicle equal, slender, appressed; spikelets terete, subulate, 5-flowered, awned; calyx (glumes) unawned." *Ell.* — Near Orangeburg, South Carolina. April. ☿ ? — Culms 12′ – 18′ high. Awn as long as the palea. (*)

** * Flowers awnless: panicle spreading: perennials.*

5. **F. elatior,** L. Culms 1° – 2° high; leaves linear, smooth; panicle long, narrow, erect, the erect branches bearing the loosely 5 – 10-flowered spikelets throughout; palea oblong-lanceolate, barely pointed. — North Carolina, and northward. Introduced.

6. **F. nutans,** Willd. Culms 2° – 4° high, and, like the broadly linear leaves, rough, or the latter hairy; panicle 1-sided, simple, erect or bending, the branches mostly by pairs, remote, bearing few ovate 5 – 6-flowered spikelets near their summits, at length reflexed; glumes rough on the back, acute; lower palea ovate, barely pointed. — Rich woods and banks, Florida, and northward. Aug.

7. **F. grandiflora,** Lam. "Panicle simple, erect; spikelets very few, generally 7-flowered; flowers acute, distant." — Carolina, *Frazer.* (*)

8. **F. unioloides,** Willd. Panicle contracted; spikelets compressed, 8-flowered, awnless; sheaths of the leaves bearded at the summit. — Carolina, *Willd.* — Panicle nodding, expanding. Spikes oblong-lanceolate. Root fibrous. (*)

35. BROMUS, L. Brome-Grass.

Grasses with flat leaves, and long-stalked spikelets in loose panicles. Spikelets large, 3 – many-flowered. Glumes membranaceous, unequal, commonly keeled. Lower palea usually awned under the apex, convex on the back, about 7-nerved at the base. Stamens 3. Grain flattened and grooved on the inner face, and adherent to the upper palea.

1. **B. ciliatus,** L., var. **purgans,** Gray. Perennial; panicle diffuse, the slender drooping branches mostly by pairs; spikelets lanceolate after flowering, 10 – 12-flowered; lower glume 1-nerved, the upper 3-nerved; lower palea convex on the back, 7-nerved, hairy, about as long as the awn; culms 2° – 4° high; leaves and sheaths smooth or downy. — River-banks and rich soil, Florida, and northward. June.

2. **B. secalinus,** L. (Cheat or Chess.) Annual; panicle spreading, with clustered, at length drooping branches; spikelets (½′ – 1′ long) 8 – 10-flowered, oblong-ovate; lower glume 5-nerved, the upper 7-nerved; paleæ smooth, the lower one convex, 7-nerved, awnless or short-awned; culms 1° – 2° high; leaves and sheaths smooth or downy. — Grain-fields, &c. Introduced.

36. UNIOLA, L.

Tough perennial grasses, with erect culms, from creeping rootstocks, and mostly broad, flat many-flowered spikelets, in erect or drooping panicles, with one or more of the lower flowers glume-like and neutral, and the upper imperfect. Glumes lanceolate, compressed-keeled. Lower palea rather rigid, strongly compressed-keeled, nerved, awnless, much larger than the 2-keeled upper one. Grain free. Stamens 1 – 3.

** Spikelets long-pedicelled, drooping: flowers appressed.*

1. **U. latifolia,** Michx. Culms 2° – 3° high; leaves flat, lanceolate (½′ – 1′ wide); panicle loose, drooping; spikelets green, oblong, acute, 10 – 15-flowered; lower palea one third longer than the upper, fringed on the keel, acutish; stamen 1. — Banks of rivers, Florida, and northward. July and Aug. — Spikelets 12″ – 15″ long.

2. **U. paniculata,** L. Culms stout, 3° – 5° high; leaves very long, rigid, soon convolute; panicle crowded, drooping; spikelets whitish, oblong-ovate, about 12-flowered; paleæ equal, the lower one notched at the apex, serrulate on the keel; stamens 3. — Drifting sands along the coast, West Florida, and northward. July and Aug. — Plant pale. Leaves 2° – 4° long.

** * Spikelets sessile or nearly so, erect: flowers at length spreading.*

3. **U. gracilis,** Michx. Panicle long and slender, with the branches appressed; spikelets small (2″ – 3″), wedge-shaped, 4 – 6-flowered; lower palea longer than the upper one, smooth on the keel, obtuse; stamen 1. — Rich damp soil, Florida, and northward. July and Aug. — Culms slender, mostly erect, 2° – 4° long. Leaves 2″ – 6″ wide. Sheaths smooth or downy.

4. **U. nitida,** Baldw. Panicle short, of few rigid spreading branches; spikelets (6″ – 8″ long) oblong, 6 – 8-flowered; paleæ equal, the lower acute, serrulate near the apex; stamen 1. — Swamps, Florida, Georgia, and westward. Aug. — Culms slender, 1° – 2° high. Leaves linear, smooth.

37. PHRAGMITES, Trin. Reed.

Large perennial marsh grasses, with broad and flat leaves and panicled spikelets. Spikelets 3 – 6-flowered, with the rachis bearded with long and silky hairs. Lowest flower with a single stamen and imperfect ovary, the others triandrous and perfect. Glumes unequal, pointed. Lower palea narrowly awl-shaped, 2 – 3 times as long as the 2-cleft upper one. Stigmas 2. Grain free.

1. **P. communis,** Trin. Culms 5° – 8° high; leaves numerous, 1′ – 2′ wide; panicle diffuse, nodding; spikelets 3 – 5-flowered, about as long as the white hairs of the rachis. — Deep river marshes near the coast, Florida, and northward. Sept.

38. ELYMUS, L. Lyme-Grass.

Coarse flat-leaved perennial grasses, with rigid erect culms, bearing a single spike of 2 – 7-flowered spikelets, arranged 2 – 4 in a cluster at each joint of the zigzag rachis. Glumes 2, placed side by side before the spikelets, coriaceous, unequal-sided, mostly awned. Paleæ of the same texture as the glumes, the lower convex on the back, tapering into a rigid awn; the upper enclosing the linear hairy-tipped grain. Stamens 3. Stigmas 2.

1. **E. Virginicus,** L. Spike dense, erect (3′ long), the base usually included in the dilated sheath of the uppermost leaf; spikelets 2 – 3 in a cluster, 2 – 3-flowered, smoothish, short-awned; glumes lanceolate, strongly nerved. — River-banks, Florida, and northward. July and Aug. — Culms 2° – 3° high. Leaves rough. Sheaths smooth.

2. **E. striatus,** Willd. Spike dense, erect or slightly nodding (3′ – 5′ long), long-peduncled; spikelets 2 – 3 in a cluster, 1 – 3-flowered, hairy, long-awned; glumes linear-subulate, long-awned, much longer than the flowers. — Rocky woods and banks in the upper districts, and northward. July – Sept. — Culms slender, 2° high. Leaves and sheaths smooth or pubescent.

39. GYMNOSTICHUM, Schreb.

Spikelets 2 – 3 on each joint of the rachis, raised on a short and thick stalk. Glumes none, or a single awn-like rudiment. Otherwise as in Elymus.

1. **G. Hystrix,** Schreb. Spike erect, 3′ – 6′ long, lax-flowered; spikelets yellowish, 3 – 4-flowered, smooth or rough-hairy, long-awned; leaves and sheaths smoothish. (Elymus Hystrix, *L.*) — Upper districts, Georgia, and northward. July. — Culms 2° – 3° high. Rachis 2-edged.

40. LOLIUM, L. Darnel.

Rigid flat-leaved (introduced) grasses, with spiked many-flowered compressed spikelets, with one edge applied to the jointless rachis. Glume 1, rigid, awnless. Lower palea concave, awnless, or short-awned, herbaceous. Stamens 3. Grain adherent to the upper palea. — Spikelets distant on the elongated rachis.

1. **L. temulentum,** L. Culm tall (2° high); rachis (1° long) flexuous; glume rigid, many-nerved, longer than the 5-flowered spikelet, lower palea awned under the scarious obtuse apex. — Grain-fields, North Carolina. ①

2. **L. arvense,** Withering. Culms low (6′–12′); rachis (6′–8′ long) straight; glume rigid, many-nerved, shorter than the 8–10-flowered spikelet; lower palea awnless or short-awned at the scarious emarginate apex. — Streets of Apalachicola. July. ①

41. AIRA, L.

Low and slender tufted grasses, with the small 2-flowered stalked spikelets in a loose panicle. Glumes membranaceous, keeled, longer than the flowers. Paleæ hairy at the base; the lower one 3–5-nerved, and awned on the back. Stamens 3. Grain oblong, smooth.

1. **A. flexuosa,** L. Culms nearly naked, 1°–1½° high; leaves short, bristle-like; panicle small, capillary, spreading; lower palea toothed at the apex, much shorter than the slender awn; grain free. — Mountains of Georgia, and northward. July. ↯.

42. TRISETUM, Pers.

Spikelets 2–several-flowered. Lower palea compressed-keeled, usually bearing a bent awn below the 2-cleft or 2-pointed apex. Otherwise as in Aira. Spikelets in open or spiked panicles.

1. **T. palustre,** Torr. Smooth; culms weak (1°–1½° long); leaves flat, linear; panicle long and narrow, loose; spikelets 2–3-flowered; the lower flower awnless, the upper with a spreading awn and an awn-like radiment at the base, or rarely both flowers awnless. (Aira pallens, *Muhl.* A. triflora, *Ell.*?) — Swamps, West Florida to Mississippi, and northward. March and April. — Panicle pale, 4′–8′ long.

2. **T. molle,** Kunth. Soft downy; culms short (6′–8′); panicle (2′–3′ long) contracted, dense and spike-like; spikelets 2-flowered, the lower palea of both flowers with a spreading awn. — Mountains of North Carolina, and northward.

43. DANTHONIA, DC.

Tufted grasses, with racemose or panicled spikelets, and rough or bearded flowers. Spikelets 3–many-flowered. Glumes nearly equal, membranaceous, longer than the flowers, awnless. Lower palea rigid, concave, many-nerved, bearded below, sharply 2-toothed at the apex, bearing an intermediate awn, which is flattened and twisted near the base. Stamens 3. Grain oblong, free.

1. **D. spicata,** Beauv. Spikelets 4 – 8, racemose, 7-flowered; lower palea rough with short rigid hairs, much longer than the lanceolate-subulate teeth; culms (10′ – 18′ high) slender; leaves short and narrow, soon involute. (Avena spicata, *L.*) — Dry barren soil, Florida, and northward. June and July. — Raceme 1′ – 2′ long.

2. **D. sericea,** Nutt. Spikelets numerous, panicled, 7-flowered; lower palea white with long silky hairs, as long as the slender, awn-pointed teeth; culms 2° high; sheaths of the linear leaves woolly above. (Avena spicata, *Ell.*) — Upper districts of Georgia, and northward. April.

44. ARRHENATHERUM, Beauv.

Tall grasses, with flat leaves, and spreading panicles with clustered or whorled branches. Spikelets 2-flowered, with the awn-like rudiment of a third flower; the lower one staminate, the upper perfect. Glumes membranaceous, concave, the upper one as long as the flowers. Paleæ herbaceous; the lower one of the perfect flowers slightly awned near the apex, that of the staminate flower bearing a long bent awn below the middle. Stamens 3.

1. **A. avenaceum,** Beauv. Culms smooth, 2° – 3° high; leaves broadly linear; panicle narrow, whitish, 8′ – 10′ long; glumes scarious. — North Carolina, *Curtis.* Introduced. May. ♃.

45. ANTHOXANTHUM, L. Sweet-scented Grass.

Grasses with flat leaves and 3-flowered spikelets, crowded in a spiked panicle; the two lower flowers neutral, and consisting of a single hairy palea awned on the back; the upper flower perfect, of two smooth awnless paleæ, and two very thin glumes, the upper one 3-nerved, longer than the flower, and twice as long as the 1-nerved lower one. Stamens 2. Grain enclosed in the paleæ.

1. **A. odoratum,** L. Culms 1° high; leaves linear, hairy; panicle 1′ – 3′ long. — Low grounds around the larger cities, Savannah, Charleston, &c. Introduced. April and May.

46. PHALARIS, L.

Spikelets crowded in a densely spiked panicle, 3-flowered; the two lower flowers reduced to hairy scales; the upper perfect, consisting of 2 boat-shaped awnless, at length coriaceous paleæ, the lower one longer and enclosing the upper, and two nearly equal broadly keeled glumes which are longer than the flower. Stamens 3. Styles elongated. Grain enclosed in the paleæ.

1. **P. intermedia,** Bosc. Culms ascending, slender, 6′ – 12′ high; leaves short, with the uppermost sheath inflated; spike ($\frac{1}{2}$′ – 1′ long) oval, compact; glumes lanceolate, slender-pointed, broadly keeled, twice as long as the hairy ovate flower. (P. Americana, *Ell.* P. microstachya, *DC.*) — Sandy places along the coast, Florida to North Carolina. April and May. ① — Leaves broadly linear, 1′ – 2′ long, somewhat glaucous. Spike white or purplish.

Var. **angusta.** (P. angusta, *Nees.*) Culm stout (2° – 3° high); spike cy-

lindrical (2′–4′ long), somewhat interrupted at the base; glumes short-pointed, rather narrowly keeled, ⅓ longer than the ovate hairy flower. — South Carolina, and westward. ① — Leaves not glaucous, 4′–10′ long.

47. PASPALUM, L.

Spikelets spiked or somewhat racemed, apparently 1-flowered, awnless, borne in 1–4 rows on one side of the flattened or triangular jointless rachis. Glumes 2, membranaceous, nearly equal. Paleæ 2, ovate or roundish, coriaceous; the lower one larger, concave, and partly enclosing the flattened upper one. Stamens 3. Grain included in the indurated paleæ. Such is the apparent structure of the spikelet, but theoretically it is 2-flowered, as in Panicum, with the lower glume and upper palea of the lower flower undeveloped.

* *Spikes racemed: spikelets partly enclosed by the recurved margins of the broadly winged membranaceous rachis.*

1. **P. fluitans,** Kunth. Spikes very numerous; spikelets in two rows, minute (½″ long), oblong, pubescent; glumes pointed; culm branching, ascending from a creeping or floating base; leaves flat, broadly linear (4″–8″ wide). (Ceresia fluitans, *Ell.*) — River-swamps, Florida, and northward. Sept. and Oct. ① — Culms smooth, 1°–3° long.

2. **P. Walteri,** Schultes. Smooth; spikes 3–7, the lowest ones included in the sheath of the uppermost leaf; spikelets in two rows, ovate, smooth; glumes obtuse, 5-nerved. (P. vaginatum, *Ell.*) — Low cultivated grounds, Florida to North Carolina, and westward. July and Aug. — Culms decumbent, creeping, 1°–3° long. Leaves linear, short.

* * *Spikes mostly by pairs, divaricate: spikelets ovate-lanceolate, acute, 2-rowed on the slender wingless rachis: glumes smooth, longer than the palæ.*

3. **P. Digitaria,** Poir. Peduncles elongated, lateral and terminal, often 2–3 together from the upper sheath; spikes (3′–4′ long) filiform, spreading horizontally; glumes even, 7-nerved, ⅓ longer than the obtuse perfect flower; culms ascending from a creeping and branching base; leaves lanceolate, obtuse, flat, mostly fringed on the margins, the sheaths compressed. (Milium paspalodes, *Ell.*) — Open swamps, Florida to North Carolina, and westward. July–Sept. ↳ — Culms 1°–2° high.

4. **P. vaginatum,** Swartz. Peduncles single, terminal, spikes (rarely 3 or 4) short (1′–1½′ long), erect or horizontal; glumes rugose, 5-nerved, rather longer than the acute flower; culms diffusely creeping, short-jointed; the flowering branches (4′–10′ long) erect; leaves (1′–3′ long) subulate-convolute, their dilated imbricated sheaths persistent. (P. furcatum, *Fluegge.*) — Saline swamps, West Florida, and southward. Aug. and Sept. ↳ — Culms 2°–4° long. Sheaths compressed, bearded at the throat.

* * * *Spikes solitary, or few and racemose: spikelets ovate or roundish, in 2–4 rows: rachis mostly flattened and flexuous: glumes and paleæ nearly equal.*

5. **P. distichum,** L. Spikes 2, rarely 3 or 4, spreading (1′–1½′ long); spikelets in 2 rows, single, ovate, acute, as wide as the straight rachis; glumes

3-nerved, more or less pubescent; culms diffuse, creeping; leaves flat, glaucous, rough above, and, like the sheaths, smooth or hairy. (P. tristachyum, *Leconte*?) — Swamps and low grounds, Florida to North Carolina, and westward. Aug. and Sept. ♃ — Flowering stems 1° high.

6. **P. præcox,** Walt. Spikes 3–6; spikelets by pairs, in 3 rows, orbicular, compressed, as wide as the straight and flat rachis; glumes smooth, 3-nerved, often discolored; culms erect (3°–4° high), simple; leaves long and narrow; sheaths purple, smooth or hairy. — Pine-barren swamps, May and June. ♃.

7. **P. læve,** Michx. Spikes 3–5, long (3′–4′) and slender; spikelets single, in 2 rows, orbicular, wider than the flexuous rachis; glumes smooth and even, 5-nerved; culms simple, erect (3°–4° high); leaves (deep green) and sheaths smooth, or the latter hairy. — Dry woods and margins of fields, Florida, and northward. July and Aug. ♃ — Spikelets 1½″ long, larger and thicker than the last.

8. **P. Floridanum,** Michx. Spikes 2–3, thick, erect; spikelets large (2″ long), mostly in 3 rows, broadly oval, tumid, wider than the flexuous rachis; glumes smooth, 5-nerved, more or less rugose; culms rigid, erect (2° high); leaves narrow, rigid, and, like the sheaths, rough-hairy. (P. macrospermum, *Fluegge.*) — Damp soil, near the coast, Florida. Aug. and Sept. ♃ — Plant glaucous.

9. **P. racemulosum,** Nutt. Spikes 2–3, slender, erect (4′ long); spikelets single or by pairs, obovate, distant on the filiform and somewhat flexuous rachis, distinctly pedicelled; glumes smooth, obtuse, 7-nerved; culms simple, erect (2°–3° high); leaves long, linear, keeled, glaucous, and, like the sheaths, sprinkled with long white hairs. (Panicum Alabamense, *Trin.*) — Dry sandy soil, Florida to North Carolina, and westward. Aug. and Sept. ♃.

10. **P. undulatum,** Poir. Spikes 2–12, spreading (2′–3′ long); spikelets small (1″ long), oval or roundish, crowded in 3–4 rows under the broad and flat rachis; glumes smooth, 5-nerved; paleæ of the neutral flower often rugose; culms erect or ascending, mostly branching; leaves deep green, broadly linear, flat, mostly fringed on the margins or near the base, and, like the smooth or hairy sheaths, often purple. (P. purpurascens, *Ell.* P. plicatulum, *Michx.* P. confertum, *Leconte.* P. Boscianum, *Fluegge.*) — Low cultivated grounds, Florida to North Carolina. Sept. ① — Culms ½°–3° high.

11. **P. Blodgettii,** n. sp. Spikes 4, filiform; spikelets minute (⅓″ long), in 3 rows, elliptical, as wide as the straight rachis; glumes 3-nerved, minutely pubescent and granular; culms tufted, simple, erect (1°–1½° high); leaves flat, fringed on the margins. — Key West, *Dr. Blodgett.* ♃ — Spikes 1′ long.

12. **P. ciliatifolium,** Michx. Spikes slender, mostly solitary, rarely 2–3, on long lateral and terminal peduncles, of which 2–3 often project from the upper sheath; spikelets orbicular, in 2–3 rows, wider than the narrow flexuous rachis; glume 3-nerved, commonly pubescent; culms tufted (1°–2° long), erect or spreading, simple or branched; leaves 2″–9″ wide, flat, wavy and fringed on the margins, or, like the sheaths, hairy all over. (P. setaceum, and P. debile, *Michx.* P. dasyphyllum, *Ell., &c.*) — Wet or dry soil, very common. June–Sept. ① and ♃.

48. AMPHICARPUM, Kunth.

Perennial flat-leaved grasses, with the spikelets nearly as in Panicum, but of two kinds; one perfect, but rarely fruitful, disposed in a simple terminal panicle or raceme; the other larger, pistillate or perfect, and borne at the summit of long runner-like radical peduncles. Lower glume minute or wanting.

1. **A. Purshii,** Kunth. Culms tufted, erect from fibrous roots, naked above; leaves lanceolate, rather thin, clothed, like the sheaths, with spreading rigid hairs; upper flowers in a strict panicle; those at base of the culm perfect; grain ovoid or oblong, terete. (Milium amphicarpon, *Pursh.*) — Low sandy pine barrens, Georgia, and northward. Sept. — Culms 1° – 3° high. Glumes of the upper flowers 5-nerved, of the lower one white, many-nerved.

2. **A. Floridanum,** n. sp. Culms subterraneous, diffusely creeping; flowering branches erect (1° – 3° high), branching; leaves linear-lanceolate, rigid, smooth; sheaths fringed on the margins; upper flower abortive, panicled or racemed, oblong (3″ long), acute; glumes 5-nerved; anthers of the radical flowers imperfect; grain compressed-globose, pointed. — Banks of the Apalachicola River, Florida. Sept. and Oct. — Plant pale green. Paleæ of the radical flowers crustaceous at maturity.

49. PANICUM, L. Panic-Grass.

Inflorescence spiked, racemose or panicled. Spikelets 2-flowered, naked (no involucre). Glumes 2, herbaceous; the upper one usually as long as the flowers, the lower smaller, often minute, or occasionally wanting. Lower flower staminate or neutral, of 1 – 2 paleæ; the upper palea, when present, small and hyaline, the lower herbaceous and resembling the upper glume. Upper flower perfect, coriaceous, awnless, enclosing the free grain. Stamens 3.

§ 1. DIGITARIA. — *Inflorescence spiked: spikelets* 2 – 3 *together, imbricated on one side of a filiform rachis: lower flower of one palea, and neutral: glumes shorter than the flowers: annuals.*

1. **P. sanguinale,** L. (Crab-Grass.) Culms ascending from a diffusely creeping base; leaves thin, spreading, the lower part, like the sheaths, hairy; spikes 5 – 10, spreading; spikelets oblong, pointed; glumes hairy on the margins, the upper half as long as the flowers, the lower minute, or in var. villosum (Digitaria villosa, *Ell.*, a smaller and more hairy form) wanting. — Cultivated grounds and waste places everywhere. May – Oct.

2. **P. filiforme,** L. Culms erect, sparingly branched (2° – 3° high); leaves linear, erect, and, like the sheaths, hairy; spikes 2 – 5, alternate, erect, filiform; spikelets oblong, acute, scattered; upper glume half as long as the acute blackish palea, the lower wanting. — Dry sandy soil, common. Aug. and Sept.

§ 2. PANICUM Proper. — *Glumes* 2, *unequal, awnless: spikelets in panicles or racemes.*

* *Spikelets crowded in simple or panicled racemes.*

+ *Sterile flower of one palea, neutral.*

3. **P. tenuiculmum,** Meyer. Culm filiform, erect, simple; leaves chiefly radical, linear (2″ wide); racemes 8 – 12, remote, 3 – 6-flowered, forming a long

narrow and simple panicle; rachis flexuous, naked and bristle-like at the apex; spikelets ovate (1″ long); upper glume 9-nerved, twice as long as the obtuse lower one. — South Florida. — Culms 1½° – 2° high. Racemes distant on the common rachis, ½′ long.

+ + *Sterile flower of two palecæ, staminate or neutral.*

4. **P. gibbum,** Ell. Panicle spiked, cylindrical, 3′ – 5′ long; spikelets oblong, obtuse; upper glume oval, strongly 11-nerved, tumid at the base, twice as long as the smooth fertile flower, the lower one minute; sterile flower 3-androus; culms branched, slender, reclining; leaves linear-lanceolate, smooth or hairy. — Swamps, Florida to North Carolina. July – Sept. — Plant deep green. Spikelets caducous.

5. **P. Curtisii.** Panicle slender, spike-like (6′ – 8′ long), the appressed lower branches remote; spikelets ovate-lanceolate; glumes slightly keeled, the upper 5-nerved, twice as long as the lower one, and rather shorter than the acutish flower; sterile flower 3-androus; culms and smooth linear-lanceolate leaves rigid; sheaths smooth or hairy. (P. Walteri, *Ell.*, not of *Poiret* nor *Pursh.* P. carinatum, *Torr.*, in Curtis's Plants, Wilmington, not of *Presl.*) — Ponds and swamps, Florida to North Carolina. — Culms 3° – 4° high, often rooting at the lower joints.

6. **P. hians,** Ell. Panicle small, the few scattered and spreading branches naked below; spikelets in small distinct clusters, ovate; upper glume 5-nerved, 3 – 4 times longer than the lower; sterile flowers neutral, longer than the perfect flower, the upper palea rigid, obovate, involute, gaping at the apex; culms slender (6′ – 18′ high), simple; leaves linear, smooth. — Low grounds in fields and along roads, Florida to North Carolina.

7. **P. gymnocarpum,** Ell. Panicle large, pyramidal, the rigid expanding branches mostly clustered or whorled; spikelets 3 – 6 in scattered clusters (2″ long), lanceolate; glumes lanceolate-subulate, rough-keeled, 2 – 3 times longer than the perfect flower; sterile flower neutral; the lower palea as long as the lower glume, and much longer than the upper palea; culms rigid, erect; leaves (1′ or more wide) lanceolate, cordate, smooth. — Muddy banks of rivers, Florida, Georgia, and westward. Sept. ♃ — Culms 2° – 3° high. Sheaths imbricated.

8. **P. anceps,** L. Panicles lateral and terminal, diffuse; spikelets 3 – 10 in mostly scattered clusters, ovate-lanceolate, acute; glumes smooth, keeled, compressed at the apex, the upper 7-nerved, twice as long as the lower one, and one third longer than the fertile flower; culms flattened. — Var. STRICTUM. Culms strict and rigid, like the erect leaves; panicle filiform, of few appressed branches, 2′ – 3′ long. — Damp sterile soil, Florida, and northward. Common and very variable. Aug. and Sept. ♃ — Plant mostly pale. Spikelets often purple.

* * *Spikelets mostly by pairs, on short appressed pedicels (except Nos.* 13 *and* 14*), scattered on the ultimate branches of the usually ample open panicle.*

+ *Sterile flower consisting of two palecæ.*

9. **P. virgatum,** L. Culms tall (2° – 4° high); branches of the large diffuse panicle whorled or clustered; spikelets (1″ long) on rough pedicels, ovate;

glumes long-pointed, the upper 7-nerved, one third longer than the obtuse perfect flower; sterile flower 3-androus. — Sandy soil, Florida, and northward. Aug. and Sept. ♃ — Culms several in a cluster. Leaves smooth, flat (green), 1° or more long. Glumes purplish.

10. **P. amarum,** Ell. Glaucous; culms stout; branches of the slender contracted panicle smooth, appressed; leaves long and rigid, soon convolute; spikelets ovate-lanceolate (2″ long), short-stalked; upper glume pointed, strongly 7-nerved, one third longer than the oblong obtuse perfect flower, and equalling the 3-androus sterile flower. — Drifting sands along the coast, Florida, and northward. Sept. ♃ — Plant salt and bitter to the taste.

11. **P. fasciculatum,** Swartz. Smooth; culms erect (1° high), branching; leaves membranaceous, linear-lanceolate; panicle contracted, 3′ – 4′ long, with the mostly simple branches erect; spikelets deep green, obovate, acute; glumes smooth, the upper one strongly 7-nerved and reticulated, 2 – 3 times as long as the lower one, barely longer than the tumid rugose perfect flower; sterile flower neutral. (P. fuscorubens, *Lam.*) — South Florida. Oct. ♃

+ + *Sterile flower of one palea, neutral.*

12. **P. proliferum,** Lam. Smooth; culms thick and succulent, ascending, branched, geniculate; panicles lateral and terminal, diffuse; spikelets lanceolate-ovate, acute, somewhat crowded on the straight branches; upper glume 7-nerved, 3 – 4 times as long as the lower; perfect flower pointed. (P. geniculatum, *Muhl.*) — Wet places near the coast, Florida, and northward. Sept. ① — Culms 1° – 3° long.

13. **P. capillare,** L. Culms erect, simple or branched; leaves and sheaths hirsute; panicles lateral and terminal, the very slender branches at length reflexed; spikelets lanceolate-ovate, scattered on long and capillary pedicels; upper glume 5-nerved, pointed, twice as long as the lower; perfect flower obtuse. (P. strigosum, *Ell.* ?) — Sandy fields, Florida, and northward. Sept. ① — Culms 1° – 2° high.

14. **P. divergens,** Muhl. Culms slender, fragile, sparingly branched; leaves subulate, rough on the upper surface and margins; the smooth sheaths longer than the joints; panicle diffuse, bearded at the axils; spikelets small, spindle-shaped, solitary at the summit of very long (2′ – 4′) and rough peduncles; lower glume minute; perfect flower lanceolate-oblong, acute, nearly as long as the upper glume and neutral palea. (P. autumnale, *Bosc.*) — Dry sandy soil, South Carolina, and northward. Aug. ♃ — Culms 1° high. Leaves 2′ – 4′ long.

15. **P. verrucosum,** Muhl. Smooth; culms very slender, branched; leaves linear-lanceolate; panicles terminal, pyramidal, the slender scattered and often simple branches spreading; spikelets obovate, obtuse; glumes obtuse, roughened with fine warts, the upper one at length shorter than the perfect flower, the lower minute. — Swamps, Florida, and northward. Sept. ♃ — Culms 2° – 4° long. Spikelets ½″ long.

16. **P. angustifolium,** Ell. ? Culms weak, diffusely branched; leaves linear; panicle simple, the few elongated and scattered branches bearing 2 – 4

oblong-obovate acute spikelets near the summit; glumes papillose-hispid, the upper one 5-nerved, longer than the pointed granular-roughened perfect flower; the lower minute, obtuse. — Dry soil, Florida to South Carolina. — Culms 1° – 2° long. Spikelets $1\frac{1}{2}''$ long.

* * * *Spikelets single, on a spreading pedicel, disposed in open panicles: sterile flower consisting of two unequal paleæ, neutral (except No. 17): perennials: culms at length much branched.*

17. **P. latifolium,** L. Culms smooth, erect; leaves ovate-lanceolate, mostly smooth, the sheaths, especially at the joints, villous; panicle nearly simple; spikelets large (2″ long), obovate; glumes pubescent, obtuse, the upper 2 – 3 times longer than the lower one; sterile flower 3-androus. — Dry rich soil, Florida, and northward. May. — Culms 1° – $1\frac{1}{2}$° high. Leaves and panicles 3′ – 4′ long, the latter exserted.

18. **P. clandestinum,** L. Culms rigid (1° high), branched, naked at the joints; leaves lanceolate, acuminate, the sheaths papillose-hirsute; panicles small, lateral and terminal, more or less included in the sheaths; spikelets oblong, pubescent ($1\frac{1}{2}''$ long); lower glume half the length of the 7-nerved upper one. — Dry sterile soil, North Carolina, and northward. Sept. ♃ — Varies with the sheaths smooth, or merely pubescent, and the terminal panicle sometimes exserted.

19. **P. scoparium,** L. Hairy or woolly all over, except the upper surface of the somewhat rigid lanceolate leaves; culms stout (1° – $1\frac{1}{2}$° high), mostly simple; panicle terminal, exserted; spikelets obovate ($1\frac{1}{2}''$ long), obtuse, pubescent; upper glume 9-nerved, three times the length of the lower one; sterile flower neutral. — Open woods and margins of fields, in dry soil, Florida to North Carolina. May.

20. **P. pauciflorum,** Ell. "Panicle expanding, few-flowered; flowers very large; leaves narrow-lanceolate, ciliate at the base; sheaths hairy." *Ell.* — In close damp soils, Georgia, *Elliott.* May. — Culm 12′ – 18′ high, roughish and branching at the joints. Leaves 3′ – 4′ long, 3″ – 4″ wide, smooth above. Spikelets oval, the lower glume very small. Resembles *P. scoparium* in fruit, and *P. villosum* somewhat in habit. (*)

21. **P. divaricatum,** L. Shrubby, smooth; culms reclining, with short and spreading branches; leaves lanceolate, faintly nerved, deciduous from the persistent sheaths; panicles small, simple, few-flowered, terminating the branches; spikelets (2″ long) obovate, tumid, nodding; glumes smooth, many-nerved, and, like the lower palea of the sterile flower, tipped with a tuft of down; paleæ of the sterile flower nearly equal. — South Florida, *Dr. Blodgett.* — Leaves $1\frac{1}{2}'$ – 2′ long. Branches of the panicle short and diverging.

22. **P. viscidum,** Ell. Soft-hairy or downy all over, except a narrow ring below each joint of the culm; leaves lanceolate; sheaths viscid; panicle (4′ – 6′ long) compound, diffuse; spikelets (1″ long) ovate, pubescent; upper glume 9-nerved, many times longer than the minute lower one. — Varies with the leaves, sheaths, and purple spikelets smooth. — Wet swamps and bogs, near the

coast, Florida, and northward. May. — Culms 3° – 4° high, soon much branched. Leaves 6′ – 10′ long. Branches of the panicle smooth. — In the smooth form of this species I notice a remarkable deviation from the generic character. The two glumes and lower palea of the sterile flower are as usual in the genus, while the upper palea of the latter is developed into an apparently perfect flower, in all respects similar to the upper one.

23. **P. scabriusculum,** Ell. Culm (3° – 4° long), sheaths, and lower surface of the linear-lanceolate leaves rough and more or less pubescent; panicle ample, compound, diffuse, pubescent below, the divisions smooth; spikelets small, ovate, rough, but not pubescent; upper glume 9-nerved, the lower minute. — Pine-barren swamps, Florida to North Carolina. May. — Probably a form of the last.

24. **P. microcarpon,** Muhl. Culm and leaves smooth; the latter lanceolate, tapering from a broad cordate base, strongly nerved, fringed on the margins near the base; panicle compound, diffuse; spikelets very numerous, small (½″ long), oval, pubescent; upper glume 5-nerved, 3 times the length of the minute lower one. (P. multiflorum, *Ell.*, not of *Poir.* P. ovale, *Ell.* ?) — Dry soil, South Carolina, and northward. May. — Culms 2° – 2½° high. Leaves 4′ – 6′ long, 8″ – 10″ wide.

25. **P. dichotomum,** L. Culms at length much branched; panicle nearly simple, few-flowered; leaves linear-lanceolate, bearded at the base, or villous all over. (P. villosum, *Ell.*) — Var. 1. Panicles compound, diffuse; spikelets small; leaves linear-lanceolate, and, like culm, sheaths, and panicle, soft hairy (P. lanuginosum, *Ell.*), or only at the joints of the culm (P. barbulatum, *Michx.*), or smooth throughout (P. nitidum, *Ell.*, spikelets purple and very minute). — Var. 2. Culms weak; panicle loose, compound; sheaths and pale-green thin leaves soft hairy (P. pubescens, *Ell.*), or the margins of the otherwise smooth leaves fringed with long hairs (P. ciliatum, *Ell.*). — Var. 3. Culms (2° high) smooth; leaves large (6′ – 8′ long), lanceolate, rough or downy above, margins near the base and sheaths fringed; panicle large, diffuse; spikelets (1″ long) oblong, nearly smooth. (P. nervosum, *Ell.* ?) — Var. ? 4. Culms smooth and rigid (1° – 1½° high); leaves pale, rigid, lanceolate, fringed; panicle oblong, diffuse; spikelets minute, oval, very hairy. (P. sphærocarpon, *Ell.*) — Woods, fields, and swamps, everywhere, in some one of its numerous forms. March – May.

26. **P. depauperatum,** Muhl. Culms low (2′ – 12′ high), simple, erect, like the linear leaves; panicle simple, few-flowered, with the branches erect, often shorter than the subtending leaf; spikelets oval-obovate (1″ long), mostly acute; upper glume 9-nerved, smoothish, three times the length of the ovate lower one. (P. strictum, *Pursh.*) — Dry sandy soil, North Carolina, and northward. June. — Leaves rigid, 2′ – 6′ long, smoothish or hairy.

27. **P. melicarium,** Michx. "Culm weak; leaves narrow; panicle contracted; glumes membranaceous, lanceolate, nearly equal; rudiment of a flower stalked. — In Carolina and Georgia. Very smooth. Leaves long. Panicle slender, long, with few branches." *Michx.* (*)

§ 3. AULAXANTHUS. — *Spikelets awnless, single, loosely racemose on the erect branches of the compound contracted panicle: lower glume wanting, the upper one 5-ribbed, very hairy: perennials.*

28. **P. ignoratum,** Kunth. Culms erect, simple, smooth; leaves linear-lanceolate, pungent, strongly nerved, fringed on the margins, the lower ones widely spreading; panicle racemose; spikelets obovate; sterile flower 3-androus; anthers and stigmas yellow. (Aulaxanthus ciliatus, *Ell.*) — Dry gravelly soil, Florida to North Carolina. July and Aug. — Culms 2° – 3° high. Leaves and spikelets pale.

29. **P. rufum,** Kunth. Leaves erect, linear, smooth, elongated; sterile flower neutral; anthers and stigmas purple; otherwise like the preceding. (Aulaxanthus rufus, *Ell.*) — Pine-barren swamps, Florida to North Carolina. Sept. — Leaves and spikelets purplish.

§ 4. ECHINOCHLOA. — *Spikelets crowded on one side of the racemed or panicled spikes: glumes and lower palea of the sterile flower hispid-pointed or awned.*

30. **P. Crus-galli,** L. Culm stout (2° – 4° high), branching; leaves very long, broadly linear, rough; sheaths smooth, rough, or hispid; spikes (1′ – 2′ long) very numerous, crowded in a long raceme; spikelets clustered; glumes and lower palea of the sterile flower strongly hispid on the nerves, awn-pointed or long-awned; fertile flower rough-pointed. — Wet places, Florida, and northward. Aug. and Sept. ① — Awns pale or purple.

31. **P. Walteri,** Ell. Culms (1° – 2° high) branching; leaves linear, smooth, like the sheaths; spikes 5 – 12, distant, erect or appressed (½′ – 1′ long), bearded at the base; spikelets in 3 rows, awnless; glumes and lower palea hispid on the nerves, pointed; fertile flower barely pointed; rachis rough. — Damp soil, Florida to North Carolina. July – Sept. ① — Spikelets purplish.

32. **P.? molle,** Michx. "Spikes panicled, alternate, expanding, flowering on one side; spikelets approximate, pedicillate, on one side, awnless," *Ell.* — Sea islands of South Carolina, *Elliott.* Aug. and Sept. ♃ — Culm 4° – 6° high, smooth below, downy above. Leaves 12′ – 18′ long, smooth, fringed at the throat. Spikelets 2 – 3 together on a villous rachis, hairy. Plant salt and bitter.

§ 5. ORTHOPOGON. — *Panicle simple, spiked: spikes few-flowered, distant: glumes equal, hairy, the lower one long-awned: upper and lower paleæ of the sterile flower short-awned.*

33. **P. hirtellum,** L. Culms slender, ascending from a creeping base; leaves (1′ – 2′ long) ovate-lanceolate, thin; sheaths hairy; spikes about 5, distant, 5 – 8-flowered; awns (often purple) clammy. — Shady woods, Florida to North Carolina. Aug. and Sept. ♃ — Culms 1° – 2° long, branched, the erect portion 6′ – 12′ high.

50. SETARIA, Beauv.

Erect annual grasses, with flat leaves and the spikelets of Panicum proper, but crowded in cylindrical spike-like panicles; the short pedicels bearing one or more bristles, which usually exceed the spikelets.

* *Bristles roughened downward.*

1. **S. verticillata,** Beauv. Culms sparingly branched; leaves linear-lanceolate, rough above; spike cylindrical, compact, somewhat interrupted below (2′–3′ long); bristles short, single or by pairs. — Around dwellings, North Carolina, and northward. Introduced. — Culm 2° high.

* * *Bristles roughened upward.*

2. **S. glauca,** Beauv. Culms smooth, slightly compressed; leaves linear-lanceolate, rough above; spike nearly simple, cylindrical; bristles 6–10, in 2 clusters, longer than the spikelets; perfect flower transversely wrinkled. — Var. LÆVIGATUM (Panicum lævigatum, *Ell.*) has a more flattened culm, longer, narrower and smooth leaves, and the perfect flower obscurely wrinkled. — Cultivated ground, the var. in damp soil along the coast, Florida to North Carolina. — Culms 1°–3° high. Spikes 2′–3′ long, pale or purplish.

3. **S. viridis,** Beauv. Culms smooth, terete; leaves lanceolate or linear-lanceolate, rough; spikes compound, cylindrical, dense; bristles 1–3 to each spikelet; perfect flower finely striate and dotted lengthwise. — Around dwellings. Introduced. June–Sept. — Culms 1°–2° high. Spikes 1′–2′ long.

4. **S. corrugata,** Schult. Culms, narrow (2″ wide) leaves, and sheaths rough; spikes compound, cylindrical, dense, erect or bending; spikelets 6–10 in a cluster; bristles one to each spikelet, elongated; perfect flower obtuse, strongly wrinkled. (Panicum corrugatum, *Ell.*) — Dry soil, Florida and Georgia. July and Aug. — Culms 2°–3° high. Spikes 3′–6′ long, purple.

5. **S. composita,** Kunth. Culms smooth; leaves linear-lanceolate, the fringed sheaths rough-hairy at the throat; spikes loose, compound, the lower clusters scattered; bristles single or by pairs, many times longer than the spikelets; perfect flower acute, with faint transverse lines. — Dry sandy soil along the west coast of Florida, Apalachicola to Key West. June–Aug. — Culms 2°–4° long. Leaves 1° or more long. Spikes 6′–12′ long.

6. **S. Italica,** Kunth. Culms tall (4°–8° high), smooth, branched; leaves ($\frac{1}{2}$′–1′ wide) very rough; spikes compound (6′–18′ long), cylindrical, dense, the lower clusters scattered; bristles 1–2 to each spikelet, elongated; fertile flower smooth and even. — Swamps along the coast, Florida to North Carolina. July–Sept. — This, and Penicillaria spicata, *Willd.*, are commonly cultivated, under the name of MILLET, as green food for cattle. The latter seems to be the Panicum cenchroides, *Ell.*

51. CENCHRUS, L. COCK-SPUR.

Prostrate or creeping grasses, with the spikelets of Panicum proper, but enclosed, 1–several together, in spiny or bristly, at length indurated and deciduous involucres; the latter burr-like, and arranged in a terminal spike. Stamens 3. Styles united below.

1. **C. echinatus,** L. Spikes cylindrical, composed of 20 or more globular involucres (3′–4′ long); involucre downy, spiny above, and with a row of rigid barbed bristles above the base, 3–5-flowered; culms ascending. — Fields and

waste grounds, Florida to North Carolina. July – Sept. ⓘ — Culms 1° – 2° long. Involucre purplish.

2. **C. tribuloides,** L. Involucres whitish, 10 – 15 in a spike, wedge-shaped at the base, armed above with stout compressed broadly subulate erect or spreading spines; bristles none; spikelets mostly by pairs. — Sands along the coast, Florida, and northward. July – Oct. ⓘ — Culms prostrate, 1° – 2° long. Leaves linear. Spikes 1′ – 2′ long.

52. STENOTAPHRUM, Trin.

A creeping and branching grass, with the awnless spikelets sunk in excavations of the continuous flattened rachis. Spikelets by pairs, one pedicelled and imperfect, the other sessile, and with the structure of Panicum.

1. **S. Americanum,** Schrank. (Rottbœllia dimidiata, *Ell.*) — Damp sandy places along the coast, Florida to South Carolina. June – Sept. ↳ — Smooth throughout. Culms flattened, creeping, the branches nearly opposite; flowering culms erect, 6′ – 12′ high. Leaves 2′ – 6′ long, linear, obtuse, flat or folded, contracted at the base. Spikes lateral and terminal, peduncled, 2′ – 5′ long. Sterile spikelet neutral or rudimentary. Fertile spikelet sessile; the upper glume 7-nerved, 3 times the length of the lower one. Palea of the sterile flower coriaceous, like those of the perfect one.

53. ROTTBŒLLIA, Brown.

Erect perennial mostly tall grasses, with flat or channelled leaves and spiked inflorescence. Spikes nearly terete, jointed. Spikelets awnless, borne by pairs at the base of each joint; one imperfect, on a coriaceous and closely appressed pedicel; the other sessile, embedded in an excavation of the joint, 2-flowered. Glumes 2, the exterior one flat, coriaceous, with a hinge-like depression at the base, the interior boat-shaped, membranaceous. Paleæ hyaline, 1 – 2 in the staminate or neutral lower flower, and 2 in the upper and perfect flower. Stamens 3. Styles 2. Grain compressed, free. — Spikes solitary on lateral and terminal peduncles or branches.

1. **R. rugosa,** Nutt. Culms compressed; peduncles or branches clustered, short, included in the sheaths of the elongated upper leaves; spikes spreading, slightly compressed; sessile spikelet shorter than the joint; lower glume lanceolate, transversely rugose; sterile flower neutral. — Pine-barren swamps and ponds, Florida to North Carolina. Sept. — Culms 2° – 4° high. Spikes green, 1½′ – 2′ long, 1″ in diameter.

2. **R. corrugata,** Baldw.? Culm stout, compressed; peduncles mostly single, elongated; spikes slightly compressed, erect; spikelets longer than the joint; lower glume longitudinally grooved and somewhat reticulated, ovate; sterile flower staminate. — Low pine barrens, Georgia and Florida, near the coast. Sept. and Oct. — Culm 2° – 4° high. Spikes 4′ – 6′ long, 2″ in diameter, purplish.

3. **R. cylindrica.** Culm slender, terete; leaves narrowly linear; peduncles single, elongated; spikes slender, terete, mostly curved; spikelets as long as

the joint; lower glume ovate, obtuse, obscurely pitted in lines; sterile spikelet rudimentary. (Tripsacum cylindricum, *Michx.*) — Dry sandy soil, Florida. July – Sept. — Culms 1° – 2° high. Spikes 2′ – 6′ long, 1″ in diameter, purplish.

54. MANISURIS, L.

Annual grasses, with branching culms, flat leaves, and spiked inflorescence. Spikes lateral and terminal, clustered, jointed, the short peduncles enclosed in spathe-like sheaths. Spikelets 1-flowered, placed one at each end of the joints of the spike; the upper neutral, compressed, of two nearly equal hispid membranaceous glumes; the lower perfect, globose. Glumes coriaceous, concave, the lower reticulated, the upper smooth. Paleæ 2, hyaline. Stamens 3. Grain included.

1. **M. granularis,** Swartz. Leaves linear-lanceolate, and, like the sheaths, hairy; spikes 6″ – 10″ long; spikelets minute, turning black. — Fields and pastures, Florida to South Carolina. Aug. and Sept. Introduced. — Culms 1° – 2° high.

55. TRIPSACUM, L. Gama-Grass.

A tall perennial grass, with solid culms, broad and flat leaves, and spiked inflorescence. Spikelets awnless, monœcious, in jointed spikes, the upper ones staminate, the lower fertile, 2-flowered. Staminate flowers by pairs on each short triangular joint of the slender rachis, 3-androus; glumes 2, coriaceous; paleæ hyaline. Pistillate spikelets single, embedded in a deep excavation of the thick and polished joints; the outer glume cartilaginous, concave, the inner membranaceous, boat-shaped; lower flower neutral, the upper pistillate, both with hyaline paleæ. Anthers opening by terminal pores. Stigmas elongated. Grain free.

1. **T. dactyloides,** L. — Rich soil, Florida, and northward. Aug. and Sept. — Culms erect, from tufted creeping rootstocks, 3° – 5° high. Leaves 1′ wide. Spikes 4′ – 8′ long, on long lateral and terminal peduncles, 2 – 4 in a cluster or sometimes solitary. (T. monostachyum, *Willd.*)

56. ANDROPOGON, L. Broom-Grass.

Coarse perennial grasses, with branching erect culms, long and harsh leaves, and spiked inflorescence. Spikes lateral and terminal, jointed. Spikelets by pairs on each joint of the slender commonly hairy or plumose rachis; one of them pedicelled and staminate, neutral, or rudimentary; the other sessile, 2-flowered, the lower flower consisting of one palea, and neutral; the upper of 2 paleæ, mostly perfect, shorter than the herbaceous or chartaceous glumes, the lower one mostly awned at the apex (except No. 1). Stamens 1 – 3. Grain free.

§ 1. ANDROPOGON Proper. — *Upper flower perfect.*

** Peduncle solitary, bearing a single spike.*

1. **A. Nuttallii.** Culms (3° – 4° high) straight, smooth, like the long linear leaves; spikes rigid, long-peduncled, the rachis and pedicel of the sterile

flower fringed with closely appressed white hairs; spikelets awnless; glumes hispid above; sterile flower of 2 paleæ, 3-androus. (Rottbœllia ciliata, *Nutt.*) — Low pine barrens, Florida and the lower districts of Georgia. Sept. — Spikes 3′ – 6′ long.

2. **A. oligostachyus.** Culms rigid, erect; leaves linear, smooth, glaucous; spikes 3 – 4, on short mostly included peduncles, hoary with short spreading hairs; lower glume pubescent, ½ – ⅔ as long as the contorted awn; sterile flower neutral, short-awned. — Dry sand-ridges, Middle Florida. Aug. and Sept. — Culm 2° – 3° high. Spikes 2′ – 3′ long.

3. **A. tener,** Kunth. Culms filiform, like the smooth soon involute leaves; spikes terete, with the joints bearded at the base, otherwise smooth; spikelets appressed, half as long as the bent awn; glumes rough above; upper palea minute; pedicel of the awnless neutral flower bearded at the apex. — Dry grassy pine barrens, Georgia, Florida, and northward. Sept. — Culms 2° – 3° long. Spikes slender, 1′ – 2′ long. Upper leaves short, bearded at the throat.

* * *Peduncles clustered, each bearing a single spike.*

4. **A. scoparius,** Michx. Leaves smooth or rough-hairy; spikes numerous, on exserted peduncles, the slender flexuous rachis, and pedicel of the awned or awnless staminate or neutral sterile flower fringed with spreading hairs; perfect flower half as long as the awn, the glumes often roughened with elevated points. — Dry sterile soil, Florida, and northward. Aug. and Sept. — Culms 2° – 3° high. Spikes 1′ – 2′ long.

* * * *Peduncles or branches mostly clustered, bearing* 2 – 4 *rigid* (*green*) *digitate spikes: rachis and pedicel of the triandrous awnless sterile flower fringed with scattered hairs, and short-bearded at the base.*

5. **A. furcatus,** Muhl. Culm stout, rigid, 3° – 5° high; leaves rough, fringed at the base; peduncles or branches commonly several at each upper joint; spikelets appressed; glumes hispid on the nerves, half as long as the bent awn. — Open woods and margins of fields, Florida, and northward. Sept. — Spikes compressed, 2′ – 3′ long.

* * * * *Peduncles or branches* 1 – *several from each upper joint, often included in the dilated sheaths: spikelets slender, hoary with long silky spreading hairs: sterile flower reduced to an awn-like glume at the apex of the very slender pedicel, or obsolete: stamen* 1.

6. **A. tetrastachyus,** Ell. Culms 3° – 4° high; leaves and sheaths very hairy; branches short, the lower ones by pairs, the upper single; spikes 4; glumes bristly-serrulate, one fourth as long as the straight awn; pedicel of the awn-like sterile flower barely exceeding the fertile flower. — Var. DISTACHYUS. Leaves and sheaths less hairy or smoothish; spikes by pairs, more rigid, on long-exserted branches; pedicel of the sterile flower much longer than the smoother glumes. — Low pine barrens, Florida to North Carolina. Sept.

7. **A. Elliottii.** Culms 1° – 2° high, bearded at the upper joints; leaves purplish, narrow, hairy at the base; sheaths hairy, the upper ones inflated and often crowded or imbricated; branches single or by pairs; spikes by pairs (rarely

3 – 4), exserted, or included in the upper sheaths; awn 3 – 4 times the length of the glumes; hairs of the very slender rachis long and glossy. (A. argenteus, *Ell.*, not of *DC.*) — Wet or dry pine barrens, Florida to North Carolina. Sept. and Oct. — Somewhat variable, but distinguished by the dilated clustered sheaths, and by the silvery hairs of the spikes.

8. **A. Virginicus,** L. Culms mostly tall, erect or bending, with the joints remote and bearded; branches 1 – 2 from the upper dilated sheaths, compound and forming a long and loose panicle; spikes by pairs (rarely by fours), shorter than the sheaths; awn straight, four times the length of the glumes; sterile flower none. (A. vaginatus, *Ell.*, the short branches or peduncles included in the more inflated sheaths. A. dissitiflorus, *Michx.*? A. gracilis, *Carpenter*, the spikes borne at the summit of elongated simple branches.) — Barren soil, Florida to Mississippi, and northward. Sept. and Oct.

9. **A. macrourus,** Michx. Spikes by pairs, exceedingly numerous, crowded in a large and close panicle; awns 3 – 4 times the length of the glumes; sterile flower an awn-like glume. — Varies with the whole plant glaucous and more slender, branches and spikes more scattered. — Low barren soils, Florida, and northward. Sept. — Culms 2° – 5° high.

10. **A. ternarius,** Michx. "Branches remote, alternate, solitary, simple, bearing mostly three distant alternate 2-cleft spikes; hairs of the involucre shorter than the glume; flowers 3-androus; palcæ somewhat villous; awn long, contorted." *Michx.* In Carolina. (*)

§ 2. HETEROPOGON. — *Upper flower staminate or pistillate.*

11. **A. melanocarpus,** Ell. Culms tall (4° – 8° high) panicled above; leaves elongated; spikes numerous, approximate, 1-sided, shorter than their slender filiform-pointed sheaths; spikelets large, the two lowest pairs glume-like, persistent, sterile, the others deciduous; sterile flower 3-androus, with the lower glume lanceolate, membranaceous, twisted, much longer than the fertile spikelet and the smooth and short pedicel; fertile spikelet rusty bearded; the coriaceous glumes obtuse, many times shorter than the very long (4′) contorted and hairy awn. — Indian old fields, Florida and Georgia. Introduced? — Glume of the sterile spikelet, like the sheaths, rugose on the back. Perhaps identical with A. polystachyus, *Roxb.*

57. ERIANTHUS, Michx.

Tall reed-like grasses, with long and flat leaves, and panicled inflorescence. Spikelets by pairs on the slender branches, alike, one pedicelled, the other sessile, both with a hairy involucre at the base. Lower flower of one palea, neutral; the upper of two paleæ, perfect, shorter than the membranaceous nearly equal glumes, the lower one awned. Stamens 2 – 3.

1. **E. alopecuroides,** Ell. Culms 4° – 10° high; sheaths of the broad (6″ – 12″) very rough leaves woolly above, rough below; panicle (1° – 2° long) woolly, expanding, pyramidal; hairs of the involucre copious, twice as long as the sparsely hairy glumes; awn straight. — Var. CONTORTUS. (E. contortus, *Ell.*)

Smaller (2° – 4° high); leaves and sheaths smooth; panicle (6′ – 12′ long) oblong; awns short and twisted. — Var. BREVIBARBIS. (E. brevibarbis, *Michx.*) Smooth or nearly so; rachis of the oblong panicle rough (not woolly); hairs of the involucre shorter than the glumes. — Dry or wet soil, Florida to North Carolina. Sept. and Oct.

2. **E. strictus,** Baldw. Culms, leaves, and sheaths smooth or slightly roughened; panicle (10′ – 15′ long) spiked; involucre very short or none; glumes rough; awns straight. — River-banks, Florida and the lower districts of Georgia, and westward. Sept. — Culms 4° – 8° high. Leaves 3″ – 6″ wide. Spikelets twice the size of the preceding.

58. SORGHUM, Pers.

Spikelets 2 – 3 together on the slender branches of the loose panicle; the lateral ones sterile or a mere pedicel; the middle or terminal one fertile. Glumes coriaceous or indurated, closely bearded, sometimes awnless. Otherwise like Andropogon.

1. **S. avenaceum.** Panicle erect; glumes yellowish, lanceolate, the lower one hairy; one palea to each flower, linear, ciliate; awn rough, slender, twice as long as the glumes; sterile flowers reduced to one or two slender hairy pedicels. (Andropogon avenaceus, *Michx.* A. ciliatus, *Ell.*) — Dry sandy soil, Florida to North Carolina. Sept. ♃ — Culms (2° – 4° high) and leaves smooth. Panicle oblong, 6′ – 12′ long.

2. **S. nutans,** Gray. Panicle long and narrow, nodding; glumes dark brown, the upper sparingly, the lower densely hairy; paleæ of the upper flower 2, unequal; awn 4 times the length of the glumes, bent in the middle, rough above, twisted and hairy below; sterile spikelets mostly rudiments. (A. nutans, *L.*) — Dry barren soil, Florida and northward. Sept. ♃ — Culms 2° – 4° high. Panicle 1° – 2° long.

3. **S. secundum.** Panicle erect, contracted, 1-sided; spikelets nodding; glumes light brown, very hairy all over; otherwise like the last, and probably a variety of it. (Andropogon secundus, *Ell.*) — Dry sand-ridges in the pine barrens, Georgia and Florida. Sept. and Oct. — Culms 2° – 3° high.

S. VULGARE, Pers., is the DURRA CORN; S. SACCHARATUM, the BROOM CORN; S. CERNUUM, Willd., the GUINEA CORN. S. HALAPENSE, Pers., is sometimes cultivated under the name of CUBA GRASS.

59. LUZIOLA, Juss.

Perennial aquatic or marsh grasses, with narrow elongated leaves, and panicled monœcious flowers; the pistillate and smaller staminate spikelets borne on separate panicles. — Spikelets scattered, on jointed pedicels, nearly terete, 1-flowered. Glumes none. Paleæ 2, nearly equal, membranaceous, concave, obtuse, strongly nerved. Squamulæ 2. Stamens 5 – 11: anthers linear, 2-lobed at the base, much longer than the short filaments. Styles 2, short: stigmas plumose. Grain free, ovoid. Pericarp crustaceous.

1. **L. Alabamensis,** n. sp. Smooth throughout; culms low (4′ – 6′ high), simple, jointed near the base; leaves mostly two; the lowest one 3 – 4 times the length of the culm; the elongated purple sheath enclosing the short membranaceous upper one, and the stalk of the simple few-flowered panicle; spikelets pale, ovate-lanceolate, shorter than the erect or appressed capillary pedicels; the staminate and pistillate ones borne on separate culms; paleæ of staminate spikelet lanceolate, 7-nerved; those of the pistillate ovate-lanceolate, 11 – 13-nerved, much longer than the smooth grain. — Brooklyn, Conecuh County, Alabama, *J. F. Beaumont.*

60. MONANTHOCHLOË, Engelm.

A low maritime branching grass, with very short rigid crowded leaves, and diœcious flowers in solitary terminal sessile spikes. Glumes none. — Spikes short, 3 – 5-flowered; the lowest flower, or the two lower ones, neutral, of 1 – 2 paleæ; the uppermost abortive; the intermediate ones, composed of two paleæ, triandrous in the staminate, digynous in the pistillate spike. Paleæ convolute, scarious and obtuse at the apex; the lower one rigid, ovate-lanceolate, 9 – 12-nerved above; the upper rather longer, 2-keeled or 2-winged on the back. Squamulæ none. Anthers longer than the short filaments, 2-lobed at each end. Ovary lanceolate-linear, 3-angled. Styles 2: stigmas elongated, plumose with simple hairs. Grain 3-angled, free.

1. **M. littoralis,** Engelm. — Low sandy shores, South Florida, and westward. — Culms much branched, 5′ – 8′ high, smooth and somewhat woody, erect, or at length prostrate and rooting. Leaves 3″ long, very rigid, obtuse, many-nerved, rough on the margins, mostly crowded at the summit of the short branches, and enclosing the short (3″ – 4″) sessile spikes. Flowers pedicelled.

SERIES II.

CRYPTOGAMOUS OR FLOWERLESS PLANTS.

VEGETABLES destitute of proper flowers, and producing, in the place of seeds, minute homogeneous bodies (spores) containing no embryo.

CLASS III. ACROGENS.

Plants with a distinct stem, growing from the apex only, containing woody fibre and vessels.

ORDER 161. EQUISETACEÆ. (HORSETAIL FAMILY.)

Comprises only the genus

1. EQUISETUM, L. SCOURING RUSH.

Fructification terminal, spiked or cone-like. Spore-cases (*sporangia*) 6 – 7, borne on the lower surface of the peltate scales, 1-celled, opening on the inner side. Spores loose, furnished at the base with 4 club-shaped elastic filaments (*elaters*). — Stems leafless, grooved, hollow and jointed, bearing at the closed joints a toothed sheath.

1. **E. lævigatum,** Braun. Stems perennial, mostly simple, the obtuse ridges smooth, or roughened with minute tubercles; sheaths appressed, with numerous bristle-like caducous black teeth. — Stiff clay soil, North Carolina, and northward. — Stem 1½° – 4° high.

ORDER 162. FILICES. (FERNS.*)

Leafy plants, mostly with perennial rootstocks (*caudex*), which in this climate are creeping and slender, or stouter and sometimes ascending, but in the tropics often grow many feet high, with a diameter of several inches, giving the plants an arborescent appearance (*Tree-ferns*). Leaves (*fronds*) circinately rolled up in vernation (except the last Suborder), and raised on a stalk or petiole (*stipe*). Spore-cases (*sporangia*) one-

* By DANIEL C. EATON.

celled, borne on the under side of the fronds or along their margins, often covered by a membrane of various shape (*indusium* or *involucre*), containing numerous exceedingly minute spores.

Synopsis.

SUBORDER I. POLYPODINEÆ. Sporangia collected in dots, lines, or variously shaped clusters (*sori* or *fruit-dots*), or in indefinite masses, cellular-reticulated, mostly pedicelled; the stalk running into a vertical incomplete elastic ring, the straightening of which ruptures the ripe sporangium on the inner side, discharging the spores. — Fronds simple or variously divided.

TRIBE I. **ACROSTICHEÆ.** — Sporangia collected in large or indefinite masses on the back of the frond: indusium none.

1. ACROSTICHUM. Sporangia covering the lower surface of the upper pinnæ. Veins reticulated.

TRIBE II. **POLYPODIEÆ.** — Fruit-dots roundish, distinct, destitute of indusium, borne on the back of the frond.

2. POLYPODIUM. Fruit-dots scattered variously on the back of the frond, borne at or near the ends of the veins.

TRIBE III. — **VITTARIEÆ.** — Sporangia borne in a continuous elongated marginal or sub-marginal furrow.

3. VITTARIA. Fronds simple, narrowly linear.

TRIBE IV. **PTERIDEÆ.** — Fruit-dots marginal, separate or continuous. Indusium formed by the reflexed margin of the frond or its lobes, opening toward the midrib.

* Indusium thin and membranaceous, continuous around the margin of the fertile pinnæ.

4. PTERIS. Sporangia borne on a transverse intramarginal veinlet.
5. PELLÆA. Sporangia borne on the ends of the veins, at length confluent.

* * Indusium rarely continuous, mostly formed of the reflexed ends of the lobes or divisions of the pinnæ or pinnules.

6. CHEILANTHES. Sporangia borne on the veins beneath the reflexed margin of the frond. Pinnules with a midrib.
7. ADIANTUM. Sporangia borne on the under side of the indusium. Midrib none or eccentric.

TRIBE V. **BLECHNEÆ.** — Fruit-dots dorsal, linear or oblong, borne on transverse veins parallel to the midrib. Indusium fixed by its outer margin, and opening at the inner one.

8. BLECHNUM. Fruit-dots linear, elongated, covered by a continuous indusium.
9. WOODWARDIA. Fruit-dots linear-oblong, in a series near the midrib, covered by separate indusia.

TRIBE VI. **ASPLENIEÆ.** — Fruit-dots dorsal, linear or oblong, oblique or at right angles to the midrib. Indusium fixed by one margin to the veinlet, opening at the other.

10. CAMPTOSORUS. Fruit-dots straight or curved, scattered irregularly on the more or less reticulated veins, or facing each other in pairs. Frond simple.
11. ASPLENIUM. Fruit-dots oblique, on the upper side of the veins, rarely on both sides of them. Veins free.

TRIBE VII. **ASPIDIEÆ.** — Fruit-dots at or below the ends of the veins, round, or somewhat oblong and then placed across the vein. Indusium round or nearly so, fixed in the middle and opening at the margin, or reniform and fixed at the sinus.

* Fertile and sterile fronds alike.

12. CYSTOPTERIS. Indusium on the back of the veinlet, hood-shaped, fixed at the base partly under the fruit-dot, opening toward the apex of the segment.
13. ASPIDIUM. Indusium mostly on the back of the veins, orbicular or round-reniform, fixed in the middle or at the sinus, opening all round the margin.
14. NEPHROLEPIS. Indusium at the end of a free vein, reniform, fixed at the sinus or by the arcuate base, opening toward the margin of the frond.

* * Fertile and sterile fronds different.

15. ONOCLEA. Fertile fronds contracted, the divisions rolled up and berry-like.

TRIBE VIII. **WOODSIEÆ.** — Fruit-dots round, borne on the back of a free vein. Indusium fixed beneath the fruit-dot, saucer-shaped, or globose and bursting at the top.

16. WOODSIA. Indusium divided into irregular lobes, or a capillary fringe.

TRIBE IX. **DICKSONIEÆ.** — Fruit-dots marginal, roundish, borne at the ends of the free veins. Indusium cup-shaped or two-valved, its outer part composed of a reflexed lobe of the frond, or more or less united with it.

17. DICKSONIA. Indusium (in our species) small, nearly globular, membranaceous.

SUBORDER II. HYMENOPHYLLEÆ. Sporangia borne on a setiform or slender receptacle, cellular-reticulated, surrounded by a complete transverse ring. Involucres marginal, at the ends of the veins, cup-shaped or two-valved. Fronds delicately membranaceous and pellucid.

18. TRICHOMANES. Involucre cup-shaped or funnel-shaped, sometimes 2-lipped.

SUBORDER III. SCHIZÆINEÆ. Sporangia large, borne on narrow segments of the frond, oval, cellular-reticulated, crowned by the converging striæ of a complete apical ring, opening longitudinally.

19. LYGODIUM. Sporangia attached laterally in two rows to the narrow divisions of the pinnæ, each one covered by a scale-like indusium.
20. ANEIMIA. Sporangia attached by their bases to the narrow divisions of the panicled fertile branches of the frond. Indusium none.

SUBORDER IV. OSMUNDINEÆ. Sporangia large, nearly sessile on the back or margins of the mostly contracted fertile fronds, two-valved, opening vertically at the apex. Ring rudimentary or none.

21. OSMUNDA. Sporangia globular, covering the contracted fronds or portions of fronds.

SUBORDER V. OPHIOGLOSSEÆ. Sporangia very large, sessile, spiked or panicled, coriaceous, not reticulated, on narrow divisions of the frond, destitute of a ring, transversely two-valved. Fronds not circinate in vernation.

22. BOTRYCHIUM. Sporangia in panicled spikes. Sterile part of the frond pinnately divided.
23. OPHIOGLOSSUM. Sporangia in a simple spike. Sterile part of the frond simple in our species.

1. ACROSTICHUM, L.

Sporangia entirely covering the lower surface of the upper pinnæ. Veins finely reticulated with oblong hexagonal meshes. — Tall Ferns, with pinnate fronds.

1. **A. aureum,** L. Fronds coriaceous; pinnæ short-stalked, lanceolate-oblong, entire. — Coast of South Florida. — Fronds 4° – 8° high, dark green, shining.

2. POLYPODIUM, L. Polypody.

Fruit-dots round, naked, mostly at the ends of the free or reticulated veins. — Rootstocks creeping. Sterile and fertile fronds alike.

§ 1. POLYPODIUM Proper. — *Veins free.*

1. **P. vulgare,** L. Fronds evergreen, smooth on both sides, oblong, simply and deeply pinnatifid; the divisions linear-oblong, obtuse, slightly toothed; fruit-dots large. — Mossy rocks, &c., in shady woods, in the upper districts of Alabama, and northward. — Fronds 4′ – 10′ high.

2. **P. Plumula,** Willd. Fronds linear-lanceolate, narrowed at both ends, pinnatifid to the black and somewhat chaffy midrib; the divisions very numerous, narrowly linear, entire, wider at the base; fruit-dots small. — Tampa Bay, *Dr. Leavenworth.* — Fronds 12′ – 18′ high, 18″ – 24″ wide.

3. **P. hexagonopterum,** Michx. Fronds annual, broadly triangular, bipinnatifid; pinnæ lanceolate, acuminate, spreading, the lower pair erect; pinnules oblong, mostly obtuse, crenately toothed or entire; fruit-dots numerous, minute. — Shady woods, Florida to Mississippi, westward and northward. — A foot or more high from an elongated creeping rootstock. Pinnæ decurrent, forming irregular hexagonal wings on the rachis.

§ 2. MARGINARIA, Bory. — *Veins obscure, sometimes reticulating near the margin. Stipe and lower surface of the frond covered with chaffy scales.*

4. **P. incanum,** Swartz. Fronds evergreen, coriaceous, beneath thickly beset with peltate chaffy scales, smooth and green above, pinnately parted; the divisions oblong, obtuse, entire; fruit-dots near the margin. — On trunks of trees, Florida to Mississippi, westward and northward. — Rootstock chaffy, creeping. Fronds 3′ – 8′ high.

§ 3. CAMPYLONEURUM, Presl. — *Veins parallel, pinnate from the midrib: veinlets reticulated, forming a series of parallel angular arcs with short veinlets proceeding from their angles. Fronds simple.*

5. **P. Phyllitidis,** L. Fronds linear-lanceolate, entire, acuminate, of a thin chartaceous texture, semi-pellucid; fruit-dots rather large, in two rows between the veins. — South Florida. — Fronds 1° – 2° high.

§ 4. PHLEBODIUM, R. Br. — *Veins pinnate from the midrib, furcate: veinlets reticulated in mostly elongated meshes. Fruit-dots large, commonly at the extremities of two converging veinlets.*

6. **P. aureum,** L. Fronds smooth and glaucous, broadly ovate, pinnately

parted; the divisions lanceolate, acuminate, entire; fruit-dots mostly in a double series in each lobe of the frond, near the midrib. — South Florida. — Rootstock large, creeping, copiously beset with lanceolate brown chaffy scales. Stipe smooth, 8′ – 10′ long. Fronds 10′ – 15′ long, two thirds as wide.

3. VITTARIA, Smith.

Sporangia on a continuous receptacle immersed in a furrow open outwardly at or near the margin of the frond. Veins obscure, simple, connected at their extremities by the receptacle. Fronds simple, linear, elongated.

1. **V. lineata,** Swartz. Fronds nearly sessile, narrowly linear, elongated; midrib inconspicuous, lines of fructification near the margin. (V. angustifrons, *Michx.*) — On trees, South Florida. Fronds many from the short scaly rootstock, 1° – 2° long.

4. PTERIS, L.

Sporangia borne on a transverse marginal receptacle connecting the ends of the veins. Indusium continuous, formed of the membranaceous margin of the frond, at first reflexed, at length pushed back and disclosing the ripened fructification. Fronds 1 – 3-pinnate or decompound.

1. **P. longifolia,** L. Fronds lanceolate, pinnate; pinnæ numerous, narrowly linear, acuminate, obtuse at the base, the terminal one elongated, the lower ones gradually smaller. — Key West. — Fronds 1° – 2° high, smooth. Stipe more or less chaffy.

2. **P. Cretica,** L. Fronds smooth, ovate, ternate or pinnate; the lower pinnæ 2 – 3-parted, sessile, the upper ones decurrent; sterile ones lanceolate, or linear-lanceolate, finely serrate; fertile ones narrower, entire, or spinulose-serrate at the acuminate apex; veins straight, simple or forked, close together, almost at right angles to the midrib. — Shady woods, Middle and East Florida. — Frond 6′ – 10′ long. Stipe smooth, very long and slender.

3. **P. aquilina,** L. (Brake.) Fronds large, glabrous or somewhat hairy beneath, broadly triangular, tripinnate; pinnules oblong or linear, entire or hastate or pinnately parted; ultimate segments obtuse, oblong or linear, the terminal ones often elongated, the margin reflexed or revolute; veins simple or forked; indusium narrow, ciliated. — Common everywhere. — Stipe stout, 6′ – 2° high. Frond 1° – 2° long.

Var. **caudata** (P. caudata, *L.*), with very narrow segments, the terminal ones elongated, and both surfaces of the frond glabrous or even glaucous, occurs in South Florida and along the Gulf coast.

5. PELLÆA, Link.

Fruit-dots oblong or linear at the ends of the veins, confluent in a broad marginal line of fructification. Indusium as in Pteris. Veins free, forked or pinnate. Fronds mostly 1 – 3-pinnate, smooth, mostly coriaceous.

1. **P. atropurpurea,** Link. Fronds tufted, coriaceous, ovate-lanceolate, pinnate or below bipinnate; pinnæ opposite, rather distant, the lower ones

stalked; pinnules sessile, oblong or linear-oblong, truncate or subcordate at the base, obtuse or rarely somewhat mucronate; indusium formed of the reflexed and little-changed margin, at length pushed back and showing a broad marginal band of ripened sporangia. (Pteris atropurpurea, *L.* Allosorus, *Kunze, Gray.*) — Mountains of Alabama and northward, mostly on lime-rock. Frond 2′–12′ high. Stipe and rachis black and shining, smooth or somewhat rusty-pubescent.

6. CHEILANTHES, Swartz.

Fruit-dots at the thickened ends of the veins, distinct or at length confluent, covered by the continuous or interrupted reflexed margin of the lobes. Veins free. Fronds 1–3-pinnate; pinnules with a midrib, often hairy or woolly.

1. **C. Alabamensis,** Kunze. Fronds broadly lanceolate, subcoriaceous, pinnate; pinnæ ovate-lanceolate, deeply pinnatifid, or the lower ones again pinnate; pinnules ovate-oblong, rather obtuse, often auriculate at the upper side of the base, glabrous, the margin reflexed and forming a mostly continuous membranaceous involucre. (Pteris Alabamensis, *Buckley.*) — Limestone cliffs on the Tennessee and French Broad Rivers, Alabama, &c., *Buckley.* — Fronds 4′–6′ long, on slender black and polished stipes 2′–4′ long, pulverulent along the upper side, and somewhat chaffy at the base.

2. **C. vestita,** Swartz. Fronds broadly lanceolate, like the stalks hirsute with rusty hairs, bipinnate; pinnæ triangular-ovate; pinnules oblong, obtuse, more or less incised; the ends of the lobes reflexed to form separate herbaceous involucres. — Near Augusta, Georgia, *Kunze,* and northward. — Fronds 4′–8′ long, becoming smooth above.

3. **C. tomentosa,** Link. Fronds broadly lanceolate, tripinnate, above clothed with white deciduous hairs, beneath densely tomentose with brownish-white wool; primary pinnæ ovate-oblong; ultimate segments minute, round-obovate, sessile or adnate-decurrent, the margin reflexed forming a continuous somewhat membranaceous involucre. (C. Bradburii, *Hook.*, at least as to Lindheimer's plant.) — French Broad River, North Carolina and Tennessee, and southwestward. — Frond 6′–12′ long. Stipe and rachis whitish with long paleaceous hairs.

7. ADIANTUM, L. Maidenhair.

Indusium orbicular or transversely elongated, formed of a reflexed and altered portion of the margin of the frond, bearing the sporangia on its under side at the ends of the veins. Midrib none or eccentric: veins forking, mostly free. Stipe and rachis commonly black and shining.

1. **A. pedatum,** L. Stipe long and slender, forked, the spreading and recurved branches bearing on the outer side several slender horizontal pinnate divisions; pinnules numerous, alternate, short-stalked, oblong, entire on the lower side, the upper margin cleft and fruit-bearing. — Shady woods, North Carolina, and northward. — Stipe 8′–12′ high. The most graceful of all our Ferns.

2. **A. Capillus-Veneris,** L. Frond ovate-lanceolate, 2-3-pinnate; pinnules very delicate, oblique, broadly wedge-shaped or sometimes rhomboid, rather long-stalked, the upper margin deeply incised and fruit-bearing or sterile and dentate; stipe slender, ebeneous; rachis almost capillary, flexuous. — Mostly pendent from Limestone cliffs, Florida, Alabama, and westward. — Fronds 1°-3° long.

8. BLECHNUM, L.

Sporangia on a transverse elongated receptacle parallel to the midrib, combining the veins near their bases. Indusium fixed by its outer margin, opening inward. Veins of the sterile fronds free. Fronds simple or pinnate.

1. **B. serrulatum,** Michx. Fronds erect, rigid, pinnate; pinnæ articulated with the rachis; fertile ones linear-lanceolate, acute, finely and sharply serrate; fruit close to the midrib; sterile ones broader, bearing a few chaffy scales along the midrib. (B. angustifolium, *Willd.*) — Florida, *Michaux, Buckley!*

9. WOODWARDIA, Smith.

Fruit-dots linear-oblong, in one or two series on transverse anastomosing veinlets parallel and near to the midrib. Indusium attached by its outer margin to the veinlet, opening inward. Veins more or less reticulated, free toward the margin of the frond. Fronds mostly pinnatifid or pinnate.

1. **W. angustifolia,** Smith. Fronds smooth, pinnatifid; the sterile ones ovate, with broadly-lanceolate finely serrate divisions, united at the base and decurrent on the stipe, the veins reticulated in several series of areoles; fertile fronds taller, with narrowly linear entire divisions, and a single series of elongated areoles, each containing an oblong fruit-dot with a vaulted indusium. (Acrostichum areolatum, *L.* W. onocleoides, *Willd.*) — Bogs and shady banks, Florida, and northward. — Rootstock creeping, elongated, as thick as a goose-quill. Stipe 6′-12′ high, about the length of the frond.

2. **W. Virginica,** Willd. Fertile and sterile fronds alike, ovate, smooth, pinnate; pinnæ lanceolate, narrowed at both ends, pinnatifid; segments oblong, obtuse; veins forked, forming a single series of areoles along the midrib both of the pinnæ and of the segments; areoles fruit-bearing in the fertile frond. — Shallow ponds, Florida to Mississippi, and northward. — Rootstock as thick as one's finger, creeping, elongated, with a tough black exterior, the interior soft and white. Fronds 1°-4° high; stipe smooth.

10. CAMPTOSORUS, Link. Walking-leaf.

Fruit-dots linear or oblong, straight or curved, scattered irregularly on the back of the frond, often opposite in pairs, or converging and united. Indusium linear, attached by one margin to the reticulated veins of the simple frond.

1. **C. rhizophyllus,** Link. Fronds evergreen, lanceolate, cordate or hastate at the base, long-acuminate, often rooting at the extremity and giving

rise to new plants. (Asplenium rhizophyllum, *L.*) — Shaded rocks on the mountains of Georgia, and northward. — Fronds 4′ – 10′ long.

11. ASPLENIUM, L.

Fruit-dots oblong or linear, oblique to the midrib, the indusium attached by one margin to the mostly free veins, rarely curved, or double and attached to both sides of the vein.

§ 1. ASPLENIUM Proper. — *Indusia straight, attached by their whole length to the upper side of the vein; rarely some of them double, and placed back to back.*

* *Fronds pinnatifid or simply pinnate.*

1. **A. pinnatifidum,** Nutt. Fronds lanceolate, acuminate, cordate at the base, pinnatifid, or below sometimes pinnate, the roundish divisions obtuse, crenate or serrate; fruit-dots scattered. — Alleghanies of Alabama, and northward. — Fronds 3′ – 6′ long. A form with the lowest segment on each side elongated horizontally and acuminate, has been found in Alabama by *Mr. Beaumont.*

2. **A. dentatum,** L. Fronds linear-oblong, obtuse, pinnate; pinnæ mostly opposite, 8 – 12 pairs on short but distinct stalks, roundish ovate (3″ – 4″ long), cuneate at the lower side of the base, and truncate at the upper side, crenate or serrate, obtuse; fruit-dots 6 – 8 on each pinna, elongated, the one next the rachis often double. — Carolina, *Th. Moore,* Florida, *Binney.* — Fertile fronds 4′ – 6′ high, the stipe as long as the sterile fronds.

3. **A. Trichomanes,** L. Stipe and rachis slender, purplish black and shining; fronds many from the short rootstock, linear, pinnate; pinnæ numerous, minute (2″ – 3″ long), roundish oblong, narrowed at the base and attached to a raised point on the rachis; fruit-dots 4 – 8 on a pinna. (A. melanocaulon, *Willd.*) — Rocks along the Alleghanies, and northward. — Fronds 4′ – 8′ high.

4. **A. ebeneum,** Aiton. Stipe and rachis purplish black and shining; fronds linear-lanceolate or spatulate, acuminate, pinnate; pinnæ numerous, sessile, linear-oblong, auricled on one or both sides of the base, serrate or nearly entire, those below the middle of the frond gradually shorter and deflexed; fruit-dots 10 – 13 on a pinna. — Florida to Mississippi, and northward. — Fronds 6′ – 18′ high, 1′ – 3′ wide; stipe very short.

5. **A. angustifolium,** Michx. Fronds tall, lanceolate, pinnate; pinnæ numerous; the sterile ones lanceolate from a truncate base; the fertile ones narrower, and bearing 60 – 80 curved fruit-dots on the upper branches of the pinnate forking veins; indusia thickish, strongly convex. — Rich soil along the mountains, and northward. — Fronds 1° – 3° high, annual. Pinnæ 2′ – 4′ long, 4″ – 8″ wide.

* * *Fronds* 2 – 3*-pinnate or pinnatifid.*

6. **A. montanum,** Willd. Fronds small, ovate-lanceolate, pinnate; pinnæ few, petioled, ovate or triangular; the lower ones pinnatifid; the upper ones incised; divisions toothed or serrate; fruit-dots very short, the basal ones often

with a double indusium. — Mountains of Alabama, and northward. — Fronds 2′ – 5′ high, with a winged greenish rachis, and a stipe nearly as long as the frond.

7. **A. Ruta-muraria,** L. Fronds small, ovate, pinnate above, bipinnate below, the divisions stalked, obovate-cuneate, toothed at the apex; veins forked from the base; fruit-dots few, indusia laciniate at the margin. — Rocks along the mountains, and northward. — Fronds 2′ – 4′ high.

8. **A. myriophyllum,** Presl. Fronds delicately membranaceous, lanceolate, narrowed below, 2 – 3-pinnate; ultimate segments obovate-oblong, entire or 2 – 3-lobed; veins single in each segment or lobe, bearing below the middle a solitary oblong fruit-dot. (A. Anchorita, *Chapm. MS.*) — On the walls of a limestone cave at Schurlock's Spring, Jackson Co., Florida, *Chapm.* — Fronds 3′ – 10′ high, with short stipes and narrowly winged rachises.

9. **A. thelypteroides,** Michx. Fronds ample, oblong-ovate, pinnate; the deeply pinnatifid pinnæ lanceolate-acuminate from a broad sessile base; the lower ones smaller, distant, and deflexed; the lobes oblong, obtuse, crenately serrate; fruit-dots 8 – 12 to a lobe, at length confluent, those next the midrib toward the ends of the pinnæ mostly double; indusium convex, thickish. — Rich woods in the upper part of Georgia, and northward. — Fronds 1° – 3° high.

§ 2. ATHYRIUM, Roth. — *Indusium thin, attached to the upper side of the vein; or recurved and crossing the vein, attached to both sides of it, thus becoming reniform or shaped like a horseshoe.*

10. **A. Filix-fœmina,** Bernh. Fronds ample, ovate-oblong; pinnæ lanceolate, numerous; pinnules oblong or lanceolate, doubly serrate or variously incised; fruit-dots short, at length confluent. (Aspidium Filix-fœmina, *Swartz.*) — Low shady woods, Florida to Mississippi, and northward. — Fronds 1° – 3° high. — A. asplenoides (Aspidium asplenoides, *Swartz?*) is said to differ in having a creeping caudex.

12. CYSTOPTERIS, Bernhardi.

Fruit-dots round, on the back of the free forking veins, covered when young by a thin ovate or roundish hood-shaped indusium attached by the lower side rather beneath the fruit-dot, its apex pointing toward the end of the vein, at length reflexed or falling away. — Delicate Ferns with 2 – 3-pinnate fronds, and short creeping rootstocks.

1. **C. fragilis,** Bernh. Fronds ovate-oblong, bipinnate; the ovate-lanceolate pinnæ mostly opposite, the lowest pair distant, smaller; pinnules oblong or obovate, cuneate at the base and decurrent on the winged secondary rachis, variously toothed or incised; indusium ovate, acuminate. (Aspidium tenue, *Swartz.*) — Moist rocks on the mountains of North Carolina, and northward. — Fronds 4′ – 8′ long, on slender brownish stipes as long as the frond. Pinnules varying greatly in shape and size.

2. **C. bulbifera,** Bernh. Fronds lanceolate, very long and attenuated at the apex, often bearing bulblets beneath, bipinnate; pinnæ triangular-lanceolate; the lowest pair largest, distant; pinnules oblong, crenately incised or toothed, obtuse; indusium roundish, truncate. (Aspidium bulbiferum, *Swartz.*) — Rocks on the mountains of North Carolina, and northward. — Fronds 1° – 3° long. The bulblets fall to the ground, and form new plants, which are about two years in coming to maturity.

13. ASPIDIUM, Swartz. Shield-Fern.

Fruit-dots round, borne on the veins mostly below their apices. Indusium round-reniform and fixed at the sinus, or orbicular and fixed by the depressed centre. Veins with acute or attenuated apices. Our species have free veins and 1 – 3-pinnate fronds.

§ 1. LASTREA, Bory. *Indusium round-kidney-shaped, fixed at the sinus.*

* *Fronds thin and delicate, decaying in autumn; ultimate segments entire or nearly so; veins simple or once forked.*

1. **A. Thelypteris,** Swartz. Fronds smooth, ovate-lanceolate, pinnate; pinnæ lanceolate, often recurved, deeply pinnatifid; the lowest 1 – 2 pairs rather smaller; segments oblong, obtuse, nearly entire, the fertile ones with a strongly revolute margin; veins mostly forked; indusium minute, smooth. — Swamps and bogs, Florida, and northward. — Fronds 10′ – 18′ long, with an elongated stipe. This species and the next one have slender, nearly naked rootstocks, which creep several inches in advance of the fronds.

2. **A. Noveboracense,** Willd. Fronds lanceolate, tapering both ways from the middle, pinnate; pinnæ lanceolate, hairy beneath along the midrib; the lowest 4 – 6 pairs gradually smaller, distant and deflexed; segments oblong, obtuse, nearly entire; veins simple; indusium minute, smooth. — Low grounds, North Carolina, and northward. — Fronds 1° – 2° long, on rather short stipes.

3. **A. patens,** Swartz. Fronds ovate or oblong-ovate, pubescent, especially on the veins beneath, pinnate; pinnæ lance-linear from a broad base, deeply pinnatifid; the lowest pair a little smaller and reflexed; segments oblong, often falcate, entire, or the upper basal one enlarged and pinnatifid; veins simple, free, or the basal ones meeting at the sinus between the segments; indusium small, pubescent. (A. molle, *Kunze in Sill. Jour.*) — Low shady woods, Florida to South Carolina, and westward. — Fronds 1° – 3° high.

* * *Fronds thicker; ultimate segments more or less serrate or toothed; the lowest veins more than once forked.*

4. **A. spinulosum,** Swartz. Fronds ovate-oblong, thin, smooth; bipinnate or below tripinnate; pinnæ oblong-lanceolate; the lower ones broader, triangular-ovate; ultimate segments oblong, or linear-oblong, closely set on a narrowly winged partial rachis, variously incised or serrate with spinulose teeth; fruit-dots small; indusium deciduous, sparingly glandular at the margin. (A. intermedium, *Muhl.*) — Shady woods in the upper districts of North Carolina, Tennessee, and northward. — Fronds 1° – 2° long, 5′ – 9′ wide, varying greatly in outline, and in the shape of the segments.

Var. **dilatatum,** Gray. Fronds wider in outline, of a rather firmer texture; the pinnæ fewer and set farther apart, the lowest pair largest, with the 2–3 lower basal pinnules elongated; segments larger and more distant; fruit-dots larger; indusium smooth. (A. dilatatum, *Swartz.* A. campylopterum, *Kunze.*) — Summits of the Black Mountains, North Carolina, *Rugel.* — Fronds 1°–2° long, 10′–16′ wide.

5. **A. Ludovicianum,** Kunze. "Fronds membranaceous, rather rigid, finely glandular-pubescent beneath on the midribs, ovate, acuminate, bipinnate; pinnæ distant, petioled, ovate or oblong, acuminate; pinnules ovate, deeply pinnatifid; the lowest divisions sessile with a narrowed base; the upper ones adnate, oblong, obtuse, crenately appressed-serrate; serratures acute, sometimes denticulate; fruit-dots half-way between the midrib and margin, on the upper branches of the forked veins; indusium reniform, thickish, entire, smooth, persistent." *Mettenius.* — Florida to Louisiana, *Kunze.* — "Rootstock oblique; fronds 2°–3° long; stipe straw-color, sparsely chaffy." — I have not seen this Fern, which has more recently been referred by Mettenius to A. Canariense, *Al. Br.*

6. **A. Floridanum.** Fronds thickish, broadly lanceolate, pinnate; lower pinnæ sterile, triangular-lanceolate, deeply pinnatifid, with closely set oblong, obtuse divisions; upper pinnæ fertile, narrower and longer, again pinnate, with oblong obtuse pinnules, distant on the narrowly winged secondary rachis; fruit-dots large, half-way between the midrib and margin; indusium round-reniform, smooth. (Nephrodium Floridanum, *Hook.*) — Wet woods, Florida to Louisiana. — Fronds 1°–2° high, the sterile ones shorter, growing in a crown from a thick and scaly rootstock. — The plant has much the appearance of large forms of A. cristatum, *Swartz,* and may prove to be an extreme state of that species.

7. **A. marginale,** Swartz. Fronds evergreen, smooth, thickish and almost coriaceous, ovate-lanceolate, bipinnate; pinnæ lanceolate from a broad base: pinnules oblong or linear-oblong, attached by a broad base to the narrowly winged secondary rachis, entire or crenately toothed; fruit-dots large, very near the margin; indusium round-reniform, convex, thickish, smooth. — Mountains of North Carolina, and northward. — Fronds bluish-green, 1°–2° long, on a short stipe, which, like the short thick rootstock, is shaggy with large brown chaffy scales.

§ 2. POLYSTICHUM, Roth, Schott. *Indusium orbicular, fixed by the depressed centre.*

8. **A. acrostichoides,** Swartz. Fronds evergreen, thickish, smooth and shining, lanceolate, the fertile ones tallest, pinnate; pinnæ numerous, short-stalked, oblong-lanceolate, auriculate at the base on the upper side, cuneate at the lower, obtuse or acute, finely serrate or incised with spinulose-pointed teeth; the upper pinnæ of the fertile frond contracted and covered with the copious fruit dots; indusium round, peltate, smooth and entire. — Shady and rocky woods, Florida to Mississippi, and northward. — Fronds 1°–2° high. Rootstock and stipe very chaffy.

14. NEPHROLEPIS, Schott.

Fruit-dots at the ends of the veins, in a series near the margin of the pinnæ. Indusium reniform, often broadly so, fixed by the sinus, or by the arcuate base, open obliquely toward the margin of the pinnæ. Fronds pinnate, elongated; the pinnæ articulated to the rachis. Veins free, forked from the midrib, their apices thickened.

1. **N. exaltata,** Schott. Fronds linear, indefinitely elongated, unfolding numerous pinnæ, which are oblong-lanceolate, auriculate on the upper side of the base, rounded on the lower side, falcate, crenately serrate; fruit-dots large; indusium reniform or crescent-shaped, the oblique sinus narrow and deep or broad and shallow on the same pinnæ. — South Florida, *Dr. Cooper.* — Fronds 1°–6° long, 2′–3′ wide, usually pendent from the trunks of trees.

15. ONOCLEA, L.

Fertile fronds contracted, the pinnules strongly revolute and berry-like; fruit-dots on the back of the free veins, with an elevated receptacle; indusium attached partly to the receptacle and partly to the intervenular surface. Sterile fronds foliaceous, much taller than the fertile ones.

1. **O. sensibilis,** L. Sterile fronds on a long smooth stipe, broadly deltoid-ovate, pinnatifid almost or quite to the rachis; the divisions lanceolate, entire or crenately incised; veins finely reticulated with oblong-hexagonal areoles; fertile fronds shorter, bipinnate; pinnæ erect, appressed to the rachis; the pinnules crowded. — Meadows and wet places, Florida to Mississippi, and northward. — Rootstock nearly naked, creeping. Fronds varying from four inches to three feet in height.

16. WOODSIA, R. Brown.

Fruit-dots on the back of the veins; the involucres placed beneath the fruit-dot, saucer-shaped or cup-shaped, divided into irregular lobes or a delicate fringe, or sub-globose and contracted at the mouth. Small Ferns with many fronds from a short scaly rootstock.

* *Involucre fringed, the hair-like divisions incurved on the sporangia.*

1. **W. Ilvensis,** R. Brown. Fronds sparingly hairy above, villous beneath and on the stipe and rachis with brown hairs and narrow chaff, lanceolate, pinnate; pinnæ ovate-oblong, deeply pinnatifid, the divisions oblong, obtuse, entire or crenate. Fruit-dots enveloped in the fringe of the involucre. — Rocks along the Alleghany Mountains, and northward. — Fronds 3′–8′ high.

* * *Involucre divided into a few irregular lobes.*

2. **W. obtusa,** Torr. Fronds nearly smooth, broadly lanceolate, pinnate, or near the rachis bipinnate; pinnæ triangular-ovate, the lower ones distant, pinnately parted; segments oblong, obtuse, the upper ones toothed, the lower ones pinnatifid with toothed lobes; veins forked, the tips whitish on the upper surface of the frond; fruit-dots on the lobules; involucre delicate, the lobes

hidden by the ripened sporangia. — Rocky places, North Carolina, Tennessee, and northward. — Fronds 6′ – 16′ high.

17. DICKSONIA, L'Her. § SITOLOBIUM, Desv.

Fruit-dots small, globular, terminal on the free veins; sporangia on an elevated receptacle in a thin cup-shaped involucre which is partly adherent to a reflexed lobule of the frond. Fronds large, 2 – 3-pinnate, from a creeping rootstock. — Dicksonia *proper* has large two-lipped involucres, of a firmer texture, and several species have an arborescent caudex.

1. **D. punctilobula,** Kunze. Fronds delicate, slightly glandular-pubescent, as is the rachis, lanceolate-acuminate, 2 – 3-pinnate; pinnæ numerous; pinnules oblong-ovate, closely placed, obtuse, pinnately incised or pinnatifid; the divisions obtusely serrate, each one bearing a minute fruit-dot at the upper margin. — Moist shady woods in the upper part of North Carolina, Tennessee, and northward. — Rootstock slender, extensively creeping. Fronds 2° – 3° high, when crushed returning a pleasant odor.

18. TRICHOMANES, L.

Sporangia with a transverse entire ring, arranged on the lower part of a cylindrical, filiform, often elongated receptacle: involucres marginal, funnel-shaped, or bell-shaped, entire or two-lipped at the mouth. Fronds delicate, very thin and pellucid.

1. **T. Petersii,** Gray. Very small, with entangled filiform tomentose rootstocks; fronds oblong-lanceolate or obovate, entire or variously pinnatifid, narrowed into a slender stipe nearly as long as the frond, the younger ones with a few black forked hairs along the margin; veins forked, pinnate from the midrib; involucre solitary, terminal, funnel-shaped, the mouth expanded and slightly two-lipped, receptacle included. — On the face of a sandstone rock, sprinkled from a waterfall, Hancock Co., Alabama, *T. M. Peters.* Also among some Mosses sent from Pensacola, Florida. — Fronds less than an inch high.

2. **T. radicans,** Swartz? Fronds pellucid, with a loose roundish areolation, on a short broadly winged stipe, lanceolate or ovate-lanceolate, bipinnatifid; pinnæ ovate or deltoid-ovate, obtuse, the upper side of the base parallel and appressed to the winged rachis, the lower side cuneate; divisions toothed or divided into linear lobes; involucres terminal on short lobes of the pinnæ, tubular-funnel-shaped, margined, at the mouth truncate and slightly two-lipped; receptacle exserted a little or very much. (T. Boschianum, *Sturm.*) — Hancock County, Alabama, *Peters, Beaumont.* Cumberland Mountains, Eastern Tennessee, *Rev. Dr. Curtis.* — Rootstock slender, creeping, tomentose with black hairs. Fronds 4′ – 8′ high, 12″ – 18″ wide.

19. LYGODIUM, Swartz. Climbing Fern.

Sporangia beneath ovate hood-shaped imbricated indusia, in a double row on narrow divisions of the fronds, attached laterally, ovate, with a many-rayed api-

cal ring. Fronds elongated, climbing, the branches usually in pairs with a short common foot-stalk.

1. **L. palmatum,** Swartz. Fronds slender, pinnæ deeply cordate at the base, palmately 4 – 7-lobed, the lobes oblong, obtuse, entire; the upper pinnæ decompound and bearing the fruit on the very narrow segments. — Low shady woods, Florida, and northward; not common. — Rootstock very slender, creeping. Fronds 2° – 5° high, climbing on weeds and bushes.

20. ANEIMIA, Swartz.

Sporangia ovate, many-rayed at the apex, attached by the base in a double row to the narrow one-sided paniculate divisions of the two lower branches of the frond, or on separate fronds. Indusium none. Fronds erect, commonly three-branched, the middle branch sterile and 1 – 3-pinnate.

1. **A. adiantifolia,** Swartz. Fronds sparingly pubescent, erect on a slender stipe; the two lower branches elongated, pinnately decompound, fertile; sterile part of the frond deltoid-ovate, 2 – 3-pinnate; ultimate segments obovate, cuneate, entire or lobed, striate above with numerous flabellate veins. — Key West, &c., South Florida. — Fronds 6′ – 12′ high, rather rigid. Rootstock creeping, slender, covered with a black tomentum.

21. OSMUNDA, L. Flowering Fern.

Sporangia globular, short-pedicelled, having an incomplete transverse ring, represented by a few parallel striæ near the apex, opening by a vertical chink into two nearly equal valves, paniculately arranged on contracted parts of the frond or on separate fronds. Fronds tall, erect, several from a stout rootstock, 1 – 2-pinnate. Veins forking, free.

* *Fronds bipinnate, fertile at the top; sterile pinnæ few.*

1. **O. regalis,** L. Fronds ovate, smooth; sterile pinnæ distant; the finely serrulate pinnules distinct, oblong-lanceolate, cordate or truncate at the nearly sessile base, sometimes auricled at the lower side of the base; the upper pinnæ erect, panicled and thickly covered with light brown sporangia. (O. spectabilis, *Willd.*) — Swamps, Florida to Mississippi, and northward. — Fronds 1° – 5° high; pinnules 1′ – 2′ long, 3″ – 4″ wide.

* * *Sterile fronds pinnate: the pinnæ numerous, deeply pinnatifid, with oblong entire segments.*

2. **O. Claytoniana,** L. Fronds broadly lanceolate, woolly when young, at length nearly smooth; sterile pinnæ sessile, oblong-lanceolate, deeply pinnatifid; the segments crowded; fertile pinnæ few, between the middle and the base of the frond, contracted, the sporangia deepening in color as the sterile pinnæ expand. (O. interrupta, *Michx.*) — Low grounds in the upper districts, and northward. — Fronds 2° – 3° high.

3. **O. cinnamomea,** L. Sterile fronds covered with rusty wool when young, at length smooth; pinnæ sessile, lanceolate; segments broadly oblong,

obtuse; the lower basal ones in large fronds often elongated and pinnatifid; fertile frond distinct, contracted, bipinnate, very woolly, densely covered with cinnamon-colored sporangia, withering before the sterile fronds are expanded. — Low grounds, Florida, and northward. — Fronds 1°–3° high.

22. BOTRYCHIUM, Swartz. Moonwort.

Fronds mostly solitary, erect from a root of thickened fleshy fibres; the terminal branch fertile, pinnately decompound, bearing on its narrow divisions the large coriaceous, transversely 2-valved sporangia; the lateral branch sterile, with forking free veins.

1. **B. Virginicum,** Swartz. Stem tall; sterile part of the frond sessile, broadly triangular, ternately 3–4-pinnate; ultimate segments oblong-lanceolate, thin and delicate, toothed and incised; fertile part long-stalked, 2–3-pinnate. — Shady woods, Florida, and northward. — Fronds 4′–2° high.

2. **B. lunarioides,** Swartz. Stem low; sterile part of the frond mostly long-stalked, broadly triangular, 2–4-pinnate; ultimate segments of a thick and fleshy texture, roundish, ovate, oblong or lanceolate, entire, toothed, incised, or even dissected into very narrow lobes; fertile part taller than the sterile, ovate, 2–3-pinnate. (B. fumarioides, *Willd.* B. obliquum and B. dissectum, *Muhl.*) — Low shady woods and pastures, rarely in open pine-barrens, Florida, and northward. — Fronds 3′–10′ high, the succulent stem divided down to the surface of the ground, or even lower.

23. OPHIOGLOSSUM, L. Adder's-tongue.

Fronds mostly solitary, with short and often thickened rootstocks, and fleshy fibrous roots; sporangia large, coriaceous, opening transversely, connate, arranged in compact simple 2-ranked spikes, proceeding variously from the mostly simple sterile part of the frond. Veins reticulated.

1. **O. vulgatum,** L. Sterile part of the frond ovate or oblong-oval, obtuse, sessile near the middle of the stem, without a midrib; fertile spike terminal, long-peduncled; rootstock short, erect; roots fibrous, spreading horizontally. — In sphagnous meadows and pastures, Tennessee, and northward. — Fronds 4′–10′ high. — The following are probably but forms of this widely diffused and variable species.

Var. **crotalophoroides.** Smaller; sterile part of the frond near the base of the stem, ovate, abruptly contracted at the base and slightly petioled; spike short and thick; rootstock bulbous; roots slender. (O. crotalophoroides, *Walter.* O. bulbosum, *Michx.*) — Low grounds, Florida to Louisiana. — Fronds 3′–6′ high.

Var. **nudicaule.** Small, sterile part of the frond near the base of the stem, ovate or oblong, acute, narrowed into a short petiole; spike linear acuminate; rootstock bulbous; roots coarse. (O. nudicaule, *L. f.* O. ellipticum, *Hook. & Grev.*) — Low sandy places or occasionally in dry soil, Florida and Georgia. — Fronds 1′–4′ high.

ORDER 163. LYCOPODIACEÆ. (CLUB-MOSS FAMILY.)

Perennial plants, with solid branching and mostly creeping stems, sparingly or thickly clothed with small, simple, sessile, awl-shaped or linear leaves. Fructification consisting of 1 – 3-celled solitary spore-cases, axillary, either along the main stem, or only in the axils of the upper and mostly changed (bract-like) leaves.

1. LYCOPODIUM, L. CLUB-MOSS.

Sporangia of one kind, coriaceous, commonly kidney-shaped, opening transversely into two valves and containing minute powdery spores. Perennial, mostly evergreen plants; the leaves imbricated in several or many rows along the stem and branches.

§ 1. *Sporangia borne along the stem, in the axils of uniform leaves.*

1. **L. lucidulum,** Michx. Stems ascending, forking, somewhat compressed; leaves (deep green) in several rows, linear-lanceolate, very acute, sparingly denticulate, spreading or reflexed. — Shady woods on the mountains of North Carolina, and northward. — Stem 6′ – 12′ long. Leaves glossy.

2. **L. Selago,** L. Stems short and thick, terete, clustered, erect or ascending, forking; leaves in several rows, deep green, lanceolate, acute, entire, the upper erect, the lower spreading. — High mountains of North Carolina, and northward. — Stems 3′ – 6′ high, rigid. Leaves crowded.

§ 2. *Sporangia in the axils of the upper leaves, forming a terminal terete bracted spike.*

* *Bracteal and stem leaves alike, spreading.*

3. **L. alopecuroides,** L. Stem thick, terete, forking near the base, recurved, and rooting at the apex, very leafy; leaves in many rows, spreading, subulate, bristly-fringed below the middle; peduncles erect, 6′ – 12′ high, similar to the stem; spike thick, cylindrical, bristly from the spreading or recurved bracteal leaves. — Open pine-barren swamps, Florida to Mississippi, and northward. — Stems 1° – 1½° long, pale green.

4. **L. inundatum,** L. var. **pinnatum.** Stem rather slender, prostrate, creeping, pinnately branched; leaves linear-subulate, bristly-fringed below the middle, unequal, the upper and lower ones shorter and somewhat appressed, the lateral ones widely spreading; peduncle mostly solitary, erect (1° high), very leafy; spike thick, cylindrical, 2′ – 3′ long. — Low pine barrens, near the coast, West Florida. — Stem 6′ – 15′ long, and, with the spreading leaves, ½′ wide.

** *Bracteal leaves wider than those of the stem.*

+ *Leaves of the stem equal and alike.*

5. **L. clavatum,** L. Stem very long, terete, creeping, with numerous short and erect leafy branches; peduncles with scattered leaves, each bearing 2 – 3 linear-cylindrical spikes; leaves in several rows, subulate, entire, incurved, pointed, like the ovate crosely-denticulate bracts, with a spreading bristle. — Mountains of North Carolina, and northward. — Peduncles 4′ – 6′ long.

+– +– *Leaves of the flattened stem and branches unequal.*

6. **L. dendroideum,** Michx. Stem erect (6′–12′), clothed with scattered appressed subulate and entire leaves, simple below, bearing above numerous forking and spreading fan-like mostly compressed branches; lower row of leaves, and sometimes the upper, shorter, the lateral ones spreading; peduncles short, bearing one or more cylindrical spikes; bracts spreading, ovate, acute, crenate on the margins. (L. obscurum, *L.*). — High mountains of North Carolina, and northward.

7. **L. Carolinianum,** L. Stem creeping, pinnately branched, naked and rooting beneath; upper leaves short appressed, the lateral ones widely spreading, lanceolate, acute, entire; peduncle slender (6′–12′ high), clothed with scattered subulate leaves, and bearing a single linear spike; bracts ovate, acuminate, spreading. — Low pine barrens, Florida, and northward. — Stem 2′–8′ long.

8. **L. complanatum,** L. Stem long and creeping, the numerous erect branches successively forking into many linear crowded flattened branchlets; leaves minute, subulate, imbricated in 4 rows, the lateral ones slightly spreading; peduncles with minute scattered leaves, slender, bearing 2–4 erect cylindrical spikes. — Woods along the Alleghanies, and northward. — Stem 2°–10° long.

2. SELAGINELLA, Beauv.

Fructification of two kinds, either in the same or separate axils; one kind as in Lycopodium, the other with sporangia containing few (mostly 3–4) larger spores. Spikes 4-angled.

1. **S. rupestris,** Spring. Stems rigid, densely clustered, erect or spreading, much branched; leaves (grayish) subulate, rigid, rough-fringed on the margins, bristle-pointed, closely imbricated in many rows; spikes linear, nearly sessile. — Dry sand ridges in the pine barrens, and on dry rocks, Florida, and northward. — Stems 2′–3′ high.

2. **S. apus,** Spring. Stems prostrate, creeping, slender, branched; leaves scattered, unequal, the lateral ones larger and widely spreading, 2-ranked, ovate, acute or obtuse, membranaceous, denticulate on the margins; the others smaller, acuminate, and appressed; bracts of the short sessile spike similar to the leaves. — Low shady woods, Florida, and northward. — Plant whitish. Stems 3′–9′ long.

3. PSILOTUM, R. Brown.

Sporangia of one kind sessile, globular, opening at the apex into 2–3 valves, and filled with very minute powdery spores.

1. **P. triquetrum,** Swartz. Stem forking, compressed, the branches 3-angled; leaves very minute, bristle-like; sporangia spiked, 3-celled, the cells imperfectly 2-valved. — East Florida.

ORDER 164. HYDROPTERIDES. (WATER-FERN FAMILY.)

Aquatic herbs, with the sporangia of two forms, borne at the base of the leaves and bursting irregularly.

1. ISOETES, L.

Plants composed of fibrous roots and filiform cellular leaves, without any apparent stem. Sporangia sunk in an excavation of the dilated base of the leaves, plano-convex, membranaceous, filled with transverse threads and minute powdery spores; those of the central leaves filled with larger spores.

1. **I. flaccida,** Shuttlw. Immersed; leaves very long ($1\frac{1}{2}^{\circ}-2^{\circ}$), slender, flaccid, yellowish-green; spores very small, minutely pulverulent, not reticulated. — In lakes and clear streams, Middle and West Florida.

2. AZOLLA, Lam.

Minute floating plants, with pendent roots, pinnately branching stems, and thick imbricated cellular leaves. Sporangia of two kinds, ovoid, sessile on the under side of the branches, and covered with a thin membrane; the smaller kind opening transversely, containing several angular grains, attached to a central column, the larger bursting irregularly and containing numerous globular stalked spores.

1. **A. Caroliniana,** Willd. — On still water, chiefly near the coast, Florida, and northward. — Plant reddish, circular in outline, $\frac{1}{2}'-1'$ in diameter. Leaves ovate, obtuse, rounded and roughened on the back.

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